

DUN'S REVIEW

and Modern Industry

A *Dun & Bradstreet* PUBLICATION

AUGUST, 1954

75 cents



EQUIPMENT LEASING: PRO OR CON?

ON MAKING DECISIONS . . . AVAILABLE: SHARPER WITS



it eats up waste!

Food waste and waste motion . . . a modern kitchen disposer eliminates both quickly, permanently.

Today's homemaker never leaves her kitchen sink as she takes care of what used to be an unpleasant chore. *In Many of America's best-known food waste disposers an Emerson-Electric motor does this work for her.*

Emerson-Electric specializes in building motors for products that eliminate waste motion, that perform efficiently for the home, on the farm, in business and industry. It has done so for 64 years, and offers standard motors in ratings from 1/20 to 5 h.p., and hermetic motors 1/8 to 20 h.p. Your inquiry is invited.

THE EMERSON ELECTRIC MFG. CO.

St. Louis 21, Mo.

Write for these Emerson-Electric Motor Data Bulletins



Manufacturers requiring motors 1/20 to 5 h.p. can profitably use these reference guides. Specifications, construction and performance data are included for these motors:

- | | |
|--|---|
| <input type="checkbox"/> M-426-A Capacitor-Start | <input type="checkbox"/> M-426-E Oil-Burner |
| <input type="checkbox"/> M-426-B Split-Phase | <input type="checkbox"/> M-426-F Jet Pump |
| <input type="checkbox"/> M-426-C Integral | <input type="checkbox"/> M-426-G Blower |
| <input type="checkbox"/> M-426-D Fan-Duty | |

EMERSON
MOTORS • FANS



ELECTRIC
APPLIANCES



A miracle you take for granted



Your dependable home freezer may contain up to 85 feet of leakproof Bundyweld Tubing. Manufacturers insist on giving you Bundyweld's unequalled protection in evaporators, condensers, compressor parts and refrigerant lines in refrigerators and home freezers.

Chances are you seldom realize how much your eating and food-buying habits revolve around the miracle of reliable refrigeration. One reason you take refrigeration dependability for granted: Manufacturers use leakproof Bundyweld Tubing to conduct elusive, hard-to-hold refrigeration gases. Bundyweld's antileak protection has benefited millions of refrigerator owners for over 20 years.



Bundyweld Steel Tubing is the only tubing double walled from a single metal strip, copper bonded through 360° of wall contact. Manufactured by the world's largest producer of small-diameter tubing, Bundyweld won't leak, will transmit heat efficiently.

BUNDYWELD TUBING®

"The lifelines of refrigerators and freezers"

BUNDY TUBING COMPANY • DETROIT 14, MICHIGAN

a special message
for
appliance
manufacturers



need a finish
that blocks corrosion by
itself—or under paint? **specify IRIDITE®**

You can solve any problem of non-ferrous finishing . . . maximum corrosion protection . . . sparkling clear or colored decorative finishes, firm and lasting base for paint . . . with these two words—"specify Iridite". For example—

- **ON ZINC AND CADMIUM** you can get highly corrosion resistant finishes to meet any military or civilian specifications and ranging in appearance from olive drab through sparkling bright and dyed colors.
- **ON COPPER** . . . Iridite brightens copper, keeps it tarnish-free; also lets you drastically cut the cost of copper-chrome plating by reducing the need for buffing.
- **ON ALUMINUM** Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.
- **ON MAGNESIUM** Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

ALLIED RESEARCH PRODUCTS
INCORPORATED

4004-06 E. MONUMENT STREET • BALTIMORE 5, MD

Manufacturers of Iridite Finishes for Corrosion Protection and
Paint Systems on Non-Ferrous Metals, ARP Plating Chemicals,
WEST COAST LICENSEE: L. H. Butcher Co.



DUN'S REVIEW and Modern Industry

Compass Points of Business.....9

A quarterly review of current developments in business conditions with emphasis on the important indicators of the present and of the future. What is the over-all picture and how does it compare with past conditions?

Equipment Leasing: Pro or Con?.....23

I. WAYNE KELLER
Controller, Armstrong Cork Co.

Capital outlay for new equipment is becoming, in many cases, prohibitive, but replacements must be made. Are there any advantages for you in the growing scheme for equipment leasing? How can one appraise the development financially?

Available: Sharper Wits.....24

MARGARET L. JONES
Executive Methods Editor

It takes two to make training effective and worthwhile—and if the trainee is non-receptive, the trainer has a tougher job on his hands. Here is a discussion of some of the obstacles to learning that a supervisor can avoid as he guides subordinates.

D E P A R T

Heard in Washington..... 7

Paul Wooton reflects random thoughts of Cabinet members and other high officials in his report from the Nation's Capital.

Voice of Business.....16

Here are quotes to show what top management men are saying about the business and community problems which are facing America to-day.

Frontispiece.....22

New York is the world's Number One port and ships from many nations pass the skyscrapers on their way to and from other ocean havens.

Subscription: \$5 a year in U.S.A. and Possessions, and Canada. Elsewhere \$10. Single copy, 75 cents. Please state title and employing company when subscribing.

Staff personnel appear on page 88. Copyright 1954 by Dun & Bradstreet Publications Corporation. Copyrighted under International Copyright Convention. All rights reserved under Pan American Copyright Convention. The titles DUN'S REVIEW and MODERN INDUSTRY are registered in the U.S. Patent Office. Cover: U.S. Capitol Building by Devaney. Frontispiece: Elizabeth R. Hibbs Photograph.

This magazine is indexed in the Industrial Arts Index, in the Public Affairs Information Service, and also semi-annually in an index available upon request to the publishers. . . . Member BPA, NBPA, SBME, and MPA. . . . Printed in U.S.A.

On Making Decisions27

PETER F. DRUCKER

Is decision-making an inherited talent or can it be learned? Every executive knows that the ability to make decisions is one of the major factors of efficient leadership, but there are right and wrong ways to accomplish this important goal.

Open House Every Day.....29

ALFRED G. LARKE
Employer Relations Editor

The once-a-year plant tour for employees, neighbors, community leaders, grows in popularity, but a great many companies keep open house the year round. Here's how they use the program to build sales and improve community relations.

Breaking Into a New Market?.....76

JAMES K. BLAKE
Marketing Editor

Don't plunge in with a good product—it's not enough. It takes planning, appraisal, and scheduling plus clearly defined areas of executive responsibility. Here, with highlights on essentials, is how one company handled the problem.

M E N T S

The Trend of Business.....47

Spot reports on recent developments in production, employment, prices, trade, and income, vital facets of the economy.

New Methods and Materials.....67

What makes your product tick? How can plastics improve plant equipment? Here are a score of new ideas to solve plant and production problems.

Here and There in Business.....81

New techniques, products, and uses designed to do things better and more cheaply, surveyed and reported by our editors.

Published monthly by Dun & Bradstreet Publications Corporation. Publication office: 300 W. Adams Street, Chicago. Editorial, advertising, and subscription office: 99 Church Street, New York 8, N.Y., Digby 9-3300.

Correspondence generally should be addressed to the offices in New York... Advertisers should send proofs and plates with copy instructions directly to R. F. Bogner, Operating Department, DUN'S REVIEW and MODERN INDUSTRY, 350 East 22nd Street, Chicago 16. Advertisements to be set by publication must be sent with complete instructions to Production Department, DUN'S REVIEW and MODERN INDUSTRY, 99 Church Street, New York 8, N.Y.... Manuscripts or other material for publication should be addressed to the Managing Editor in New York.

SPLASHED WITH OIL...

ALGRIP

still remains Non-Slip!



It occurs every day. ALGRIP Abrasive Rolled Steel Floor Plate is installed—then insurance premiums tumble—slipping accidents stop.

The reason is tough steel floor plate impregnated uniformly with abrasive "grinding wheel" grain. Result: A truly non-skid surface that stays slip-proof, because wear only exposes new particles... a "safety extra" offered only by ALGRIP.

If your accident insurance premiums are too high, let ALGRIP bring them down. Mail this coupon today for the complete ALGRIP story. There's no cost or obligation.

Underwriter's Laboratories approved for safety.
Note depth and uniformity of abrasive grain.

A.W. ALGRIP Abrasive Rolled Steel Floor Plate
ALAN WOOD STEEL COMPANY
CONSHOHOCKEN, PA.

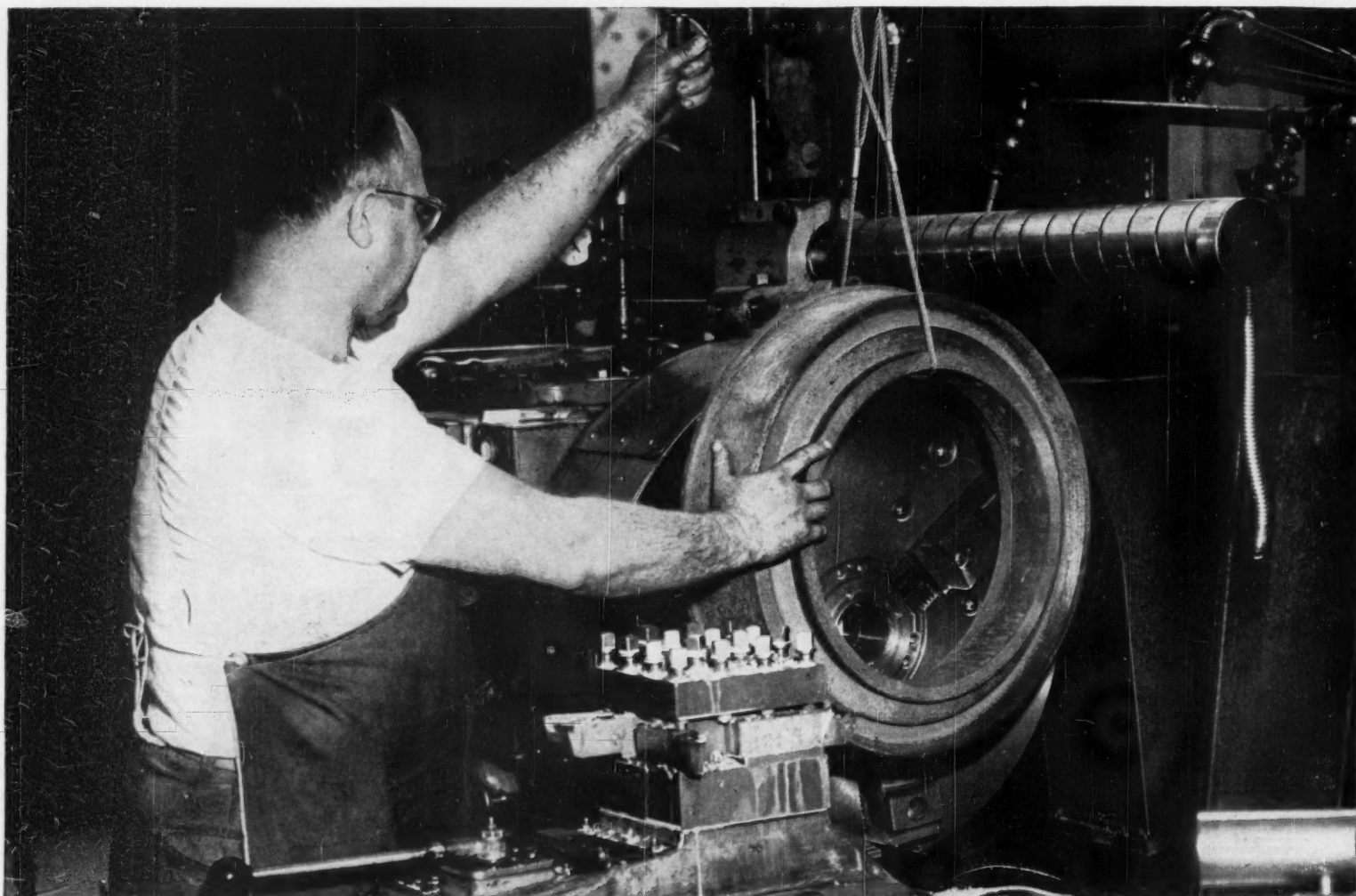
Please send Booklet AL-1 on how ALGRIP can cut costs and accidents:

NAME _____ TITLE _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____



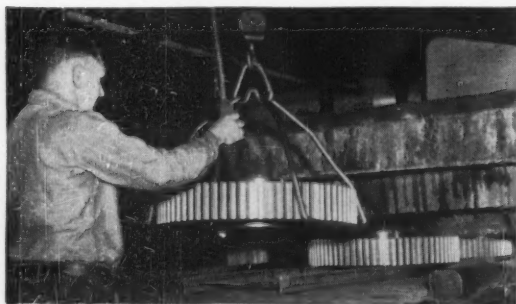


Circular blank being positioned for machining at a General Electric plant.

So Many Uses for These Sturdy, Low-Cost Blanks

If the products you make require the use of circular steel blanks, we have something that will interest you. We mean Bethlehem's circular forgings, as they are known to the trade. Actually, these strong, homogeneous blanks are both forged and rolled, with the attendant benefits of the two-way process.

Customers use them for making gears, including spur, bevel, and herringbone; crane-track wheels, end rings, sheave wheels, turbine rotors, flywheels, tire molds and rings, industrial wheels, pistons, clutch drums, and similar parts. For all such applications



Large spur gears made from Bethlehem blanks.

Bethlehem blanks are the solid, logical choice—the ideal choice, really.

We have mentioned that they are strong. Other advantages include excellent grain flow and uniform density of metal. Because of this latter feature, machinists can take cuts of required depth with confidence; fewer finishing cuts are required, and the cutting speed is often higher.

Your own firm can probably find plenty of uses for these sturdy forged-and-rolled steel blanks. They are available in a wide range of sections, and they can be furnished untreated or heat-treated, as you prefer. Sizes run from 10 in. to 42 in. OD.

We're always glad to tell you the full story, any time you wish. But before we do, perhaps you'd like to send for our Booklet 216. It shows how the blanks are made, and how they are used by many well-known companies. Write for a copy today.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



BETHLEHEM
Forged-and-Rolled
CIRCULAR
FORGINGS



BROAD THINKING inside and outside of Government is being encouraged by the Joint Committee of Congress on the Economic Report. More reliance is being put on informed conferences than on public hearings. If someone in close touch with business comes to town, he is invited in to give his appraisal of situations with which he is most familiar. The same is true of foreign visitors. Any members available and staff personnel gather for round table exchange of views. Government economists are encouraged to appear on the same basis. The committee has great advantage in that it does not have to recommend legislation.

★ ★ ★ ★ ★

Monetary policy is fixed for the year. It is sanguinely expected that the reducing of reserve requirements will provide ample money for crop moving, for Christmas inventories, and other purposes during the period when receipts are low. The change in reserve requirements was not in the interest of easier money, but to prevent money from getting tighter. Before the action was taken bank reserves were larger than was necessary. Requirements were raised in the 1930's to absorb surplus gold stocks. The country has grown up to its gold stocks. It was thought advisable to adjust the structure of bank assets and relieve the banks from carrying idle reserves and have earnings that would attract capital for amplifying the amount of credit that could be extended.

★ ★ ★ ★ ★

Although his flexible price support plan provoked unusual acrimony, Ezra Taft Benson attained unusual distinction in the struggle. None of the pressures brought to bear caused him to deviate from his course. His courage, integrity, and realism have put him on a plane attained by few other secretaries of agriculture.

★ ★ ★ ★ ★

Europe's gold and dollar reserves promise to continue to increase. Less gold is going into hoards, more into reserves. The black market for gold has all but disappeared. Those who bought at fancy prices are sorry. Some of the gains are being invested in our market.

Convertibility of currencies has been delayed by the postponement of more definite foreign trade policies. Another factor is some continuing feeling abroad that the economic improvement in the United States may not last. Convertibility would mean broader buying all over the world and would stimulate private investment in countries needing capital. Despite the attitude of our Congress toward freer trade, the world is coming to have more confidence in the stability of currencies.

★ ★ ★ ★ ★

In the public mind it is the cost of distribution which contributes most to high prices. One of the activities of the recently established Office of Distribution is to counteract exaggerated assumptions. Realizing that statistics appeal to the head and not to the heart the agency, in its publicity, is using as few figures as possible. More marketing facts are being disseminated. Distribution now has a voice in Government councils.

★ ★ ★ ★ ★

Whatever gains the Communists make in Asia, the effect on American business will not be devastating. The most serious possible loss would be tin. Use of tin in the United States might have to be curtailed by as much as 50 per cent.

Immediately following the Churchill talks American officials were resigned to the possibility of losing all of Southeastern Asia. It was difficult to understand the British position because they had much to lose—Malaya and the rise of Communist influence in India and Ceylon. The position of the United States in the Pacific, it is felt, can be well maintained by close co-operation with Australia, New Zealand, Japan, the Philippines, and Formosa. There is no thought of giving up the stronghold of Okinawa or the strategic position in Korea.

Paul Weston

WASHINGTON, D. C.

New Chevrolet Trucks

deliver more power, more
ruggedness, for less money!



Making sure the truck you buy has plenty of power and chassis ruggedness is good business in any man's book. Getting the money-saving extra power and ruggedness of Chevrolet trucks is *better* business in any man's bookkeeping.

EXTRA POWER MEANS BIGGER SAVINGS

No doubt about it, the extra power you get from new high-compression Chevrolet truck engines means you're going to pay out less for gasoline. Over a year, that adds up to a sizeable savings. Increased power brings time-saving benefits, too—greater acceleration and hill-climbing ability . . . you haul faster, get the job done quicker!

GREATER RUGGEDNESS CUTS OPERATING COSTS

Heavier axle shafts and wheel hubs on two-ton models; bigger, more durable clutches on light- and heavy-duty models; stronger, more rigid frames on all models. These features pay off in extra-low upkeep costs . . . extra miles of dependable truck life.

But these *while-you-drive* savings aren't all, by a long shot. You even save *when you buy*. For Chevrolet is America's lowest-priced line of trucks. Stop by your Chevrolet dealer's soon to see the "savingest" trucks on the road . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

MOST TRUSTWORTHY TRUCKS ON ANY JOB!

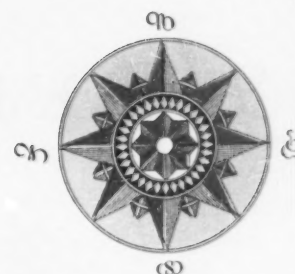


CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

ability on heavy-duty models. **THREE GREAT ENGINES**—The new "Jobmaster 261" engine* for extra heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. **NEW TRUCK HYDRA-MATIC TRANSMISSION***—offered on 1/2-, 3/4- and 1-ton models. Heavy-Duty **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **DIAPHRAGM SPRING CLUTCH**—improved-action engagement. **HYPOID REAR AXLE**—for longer life on all models. **TORQUE-ACTION BRAKES**—on all wheels on light- and medium-duty models. **TWIN-ACTION REAR WHEEL BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—greater holding. **NEW RIDE CONTROL SEAT***—eliminates back-rubbing. **NEW, LARGER UNIT-DESIGNED PICKUP AND PLATFORM STAKE BODIES**—give increased load space. **COMFORTMASTER CAB**—offers greater comfort, convenience and safety. **PANORAMIC WINDSHIELD**—for increased driver vision. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—easier, safer handling. **ADVANCE-DESIGN STYLING**—rugged, handsome appearance.

*Optional at extra cost. Ride Control Seat is available on all cabs of 1 1/2- and 2-ton models, standard cabs only in other models. "Jobmaster 261" engine available on 2-ton models, truck Hydra-Matic transmission on 1/2, 3/4- and 1-ton models.

Compass Points



OF BUSINESS

The future course of business is determined to a large extent by events in the past. The 39 Compass Points on pages 10 and 11 reflect the developments in various fundamental parts of the economy over a period of years, as well as in recent quarters; the chart at the right measures the possibilities for the fourth quarter of 1954 in terms of all-time peak past quarters. The indexes, from left to right, are constructed from Compass Points 3, 11, 13, 16, 20, and 24; the fourth quarter estimates do not take into account the consequences of an unexpected acceleration in defense spending, or other unusual developments which might radically influence business conditions.

THERE were signs of a renewed buoyancy in business in the middle months of 1954. The downward drift, evident since last Summer, was arrested and over-all volume appeared to be moving laterally at a level about 4 per cent below last year's all-time high (Compass Point 20). In manufacturing, where the adjustment of production to below-peak levels of buying was sometimes painful, both new orders and output picked up slightly (Compass Point 16). Retail sales edged upward, stock prices advanced markedly, and construction continued to boom, although there were still problems in the economy with some inventories, farm surpluses, and unemployment.

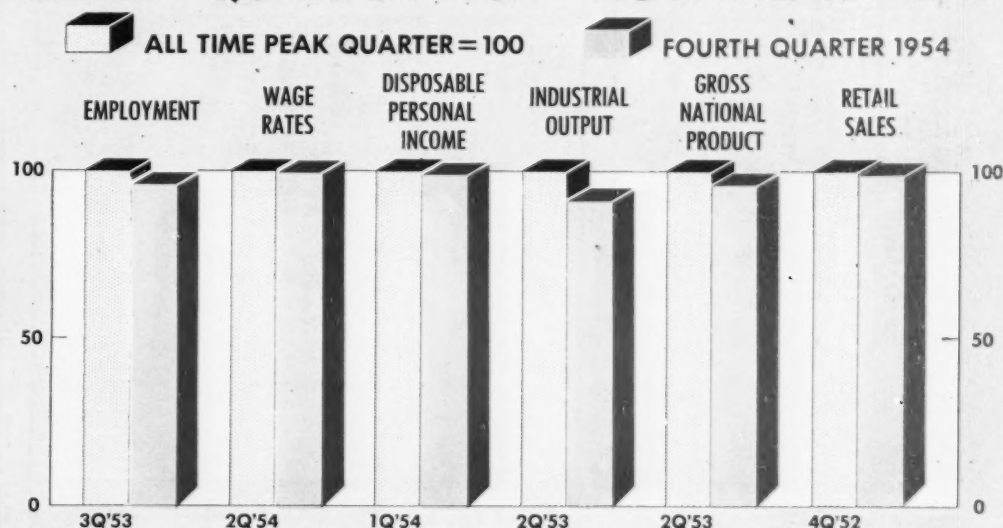
Whether the balance might be tipped toward a further adjustment or toward a resumption of growth was a point of dispute among some observers. However, the consensus was that an Autumn advance in business levels was a distinct possibility. Business men were usually confident of the future.

Business Men's Expectations

Higher sales volume than a year ago was expected in the fourth quarter of 1954 by 48 per cent of the 1,126 executives interviewed by trained reporters in the latest DUN & BRADSTREET survey of business men's expectations. Less than one-quarter (22 per cent) of the executives thought that their sales in the fourth quarter of 1954 might fall below the very high year-ago level (Compass Points 24, 25, and 26). That their net profits might equal, or exceed, the comparable 1953 figure was expected by 82 per cent of the business men.

Inventories would be pared down in comparison with last year's stocks by 27 per cent of the

FOURTH QUARTER 1954 - HOW NEAR PEAK?



executives, while 21 per cent thought their inventories would be higher than a year ago and 52 per cent expected no change. Stability in employment and selling prices appeared likely,

FOURTH QUARTER 1954 EXPECTATIONS Compared with Year-Ago Levels

	Per Cent of Business Men Expecting		
	Increase:	No Change:	Decrease:
NET SALES.....	48	30	22
NET PROFITS....	39	43	18
SELLING PRICES..	10	74	16
INVENTORIES....	21	52	27
EMPLOYEES.....	9	69	12

with about three-fourths of the executives expecting no change in either of these aspects of their business.

Manufacturers were somewhat more optimistic than in preceding surveys about their prospective new orders for the fourth quarter of 1954; 82 per cent of the manufacturers of durable goods and 89 per cent of the manufacturers of non-durables thought that order volume would be as high as, or higher than, a year ago.

While manufacturers' new orders recovered steadily from the January low, rising to \$23.1 billion in May, they remained about 11 per cent below a year ago. But new orders in March, April, and May surpassed the levels for any previous months since July 1953.

The persistent decline in unfilled orders continued unabated, reflecting the gap between new orders and shipments. Unfilled orders for durable goods in early June were about 33 per cent below a year ago; they amounted to about 4.3 months' sales, compared with 5.4 months' a year previously. The great bulk (usually around 95 per cent) of unfilled orders are held by manufacturers of durable goods.

Manufacturing, which employs about one-third of all job-holders and accounts for a similar proportion of the national income, felt more sharply than other industries the downward readjustment in business. The durable goods manufacturers were particularly affected. Employment in durable goods manufacturing in the first six months of 1954 was 7 per cent below a year ago, compared with a decline of 3 per cent in non-durables manufacturing and a rise of 4 per cent in construction.

Similarly, the sales of manufacturers of durable goods in the first half of 1954 were about

39 COMPASS POINTS OF BUSINESS

CENSUS		EMPLOYMENT				PRICES			
1	2	3	4	5	6	7	8	9	10
POPULATION	NAMES IN REFERENCE BOOK	EMPLOYMENT Civilian	EMPLOYMENT Agricultural	EMPLOYMENT Nonagricultural	UNEMPLOYMENT	CONSUMERS' PRICES	RETAIL PRICES	WHOLESALE PRICES	INDUSTRIAL STOCK PRICE AVERAGES
Millions	Thousands	Millions	Millions	Millions	Millions	Index	Index	Index	Dollars
1914	99.1	37.6	11.4	26.2	...	42.9	....	43.3	81.03
1919	105.1	42.0	10.5	31.5	...	74.0	....	88.1	99.78
1920	106.5	41.3	10.7	30.6	...	85.7	....	98.1	90.04
1921	108.5	37.7†	10.8†	26.9†	...	76.4	....	62.0	73.48
1929	121.8	47.6	10.0	36.3	1.5	73.3	120.9	61.9	311.24
1930	123.1	45.5	9.9	34.3	4.3	71.4	....	56.1	236.34
1931	124.0	42.4	9.8	31.3	8.0	65.0	....	47.4	138.58
1932	124.8	38.9	9.7	28.0	12.1	58.4	....	42.8	64.57
1939	130.9	45.8	9.3	35.6	9.5	59.4	99.0	50.1	142.66
1940	132.0	47.5	9.5	38.0	8.1	59.9	100.6	51.1	134.74
1941	133.2	50.4	9.1	41.3	5.6	62.9	108.3	56.8	121.82
1942	134.7	53.8	9.3	44.5	2.7	69.7	124.9	64.2	107.20
1943	136.5	54.5	9.1	45.4	1.1	74.0	134.0	67.0	134.81
1944	138.1	54.0	9.0	45.0	.7	75.2	137.5	67.6	143.32
1945	139.6	52.8	8.6	44.2	1.0	76.9	141.4	68.8	169.82
1946	141.3	55.2	8.3	46.9	2.3	83.4	155.2	78.7	191.65
1947	144.0	58.0	8.3	49.8	2.1	95.5	180.1	96.4	177.58
1948	146.6	59.4	8.0	51.4	2.1	102.8	192.7	104.4	179.95
1949	149.2	58.7	8.0	50.7	3.4	101.8	187.7	99.2	179.48
1950	151.7	60.0	7.5	52.5	3.1	102.8	189.0	103.1	216.31
1951	154.4	61.0	7.1	54.0	1.9	111.0	206.8	114.8	257.64
1952	157.0	61.3	6.8	54.5	1.7	113.5	210.4	111.6	270.76
1953	159.7	61.9	6.5	55.4	1.5	114.4	209.1	110.1	275.96
'53 I	158.7	61.0	5.5	55.5	1.8	113.6	208.3	109.8	286.40
'53 II	159.6	62.0	6.8	55.2	1.5	114.1	208.6	109.5	273.00
'53 III	160.0	62.9	7.4	55.5	1.3	114.9	210.2	110.8	268.11
'53 IV	160.7	61.6	6.4	55.3	1.5	115.1	209.3	110.0	276.32
'54 I	161.3	60.0	5.6	54.4	3.5	115.0	208.9	110.3	292.64
'54 II	162.0	→ 61.3	6.8	54.4	→ 3.3	114.9	→ 208.6	110.3	320.56

SALES						INVENTORIES		
21	22	23	24	25	26	27	28	29
FARM RECEIPTS	EXPORTS	IMPORTS	RETAIL SALES	WHOLESALE SALES	MANUFACTURING SALES	RETAIL INVENTORIES	WHOLESALE INVENTORIES	MANUFACTURING INVENTORIES
Million dollars	Million dollars	Million dollars	Million \$	Million \$	Million \$	Million \$	Million \$	Million \$
1914	6,039	2,114	1,789	...	...	...	...	...
1919	14,570	7,920	3,904	36,549	...	60,509	...	12,906
1920	12,606	8,228	5,278	41,364	...	63,659	...	13,484
1921	8,116	4,485	2,509	32,954	...	41,897†	...	10,705†
1929	11,299	5,241	4,399	48,459	37,814	70,262	...	12,775
1930	9,050	3,843	3,061	41,989	...	57,017	...	11,265
1931	6,369	2,424	2,091	34,752	...	42,951	...	9,105
1932	4,735	1,611	1,323	25,013	...	30,774	...	7,332
1939	8,582	3,177	2,318	42,042	26,244†	61,340	...	11,516
1940	9,056	4,021	2,625	46,375	28,919	70,313	...	12,873
1941	11,619	5,147	3,345	55,274	36,394	98,069	...	17,024
1942	16,136	8,079	2,756	57,212	41,109	125,158	...	19,348
1943	20,003	12,965	3,381	63,235	45,966	153,843	...	20,171
1944	21,153	14,259	3,929	70,208	49,828	165,387	...	19,578
1945	22,125	9,806	4,159	78,304	53,708	154,481	...	18,457
1946	25,336	9,738	4,942	102,488	71,915	151,402	...	24,620
1947	30,020	14,430	5,756	119,604	87,263	191,010	...	29,032
1948	30,464	12,653	7,124	130,521	95,172	211,560	...	31,782
1949	28,129	12,051	6,622	130,721	88,252	196,997	...	29,038
1950	28,611	10,275	8,852	143,689†	103,896	231,415	...	34,534§
1951	33,084§	15,030	10,967	158,223	113,168	266,460	...	43,123
1952	32,648	15,177	10,714	164,085	112,325	276,548	...	44,442
1953	31,188	15,737	10,900	170,741	111,800	303,372	...	46,943
'53 I	6,840	3,880	2,782	39,339	26,114	74,829	...	45,158
'53 II	6,185	4,230	2,849	43,410	28,201	77,821	...	46,334
'53 III	8,034	3,795	2,676	42,643	29,331	76,156	...	46,646
'53 IV	10,129	3,843	2,570	45,351	28,344	74,566	...	46,947
'54 I	6,603	3,394	2,498	37,944	25,260	71,332	...	45,959
'54 II	6,140	4,200	2,600	→ 43,132	26,075	→ 71,473	...	→ 44,700

→ Quarterly figures that are significant either for their change or their lack of change from previous levels. First quarter figures for most series are based upon preliminary estimates and incomplete data. Sources of the statistical series and additional information concerning the figures appear on page 15.

a record of business activity

INCOME

11 WEEKLY HOURS Indust. Workers Hours	12 WEEKLY EARNINGS Indust. Workers Dollars	13 DISPOSABLE PERSONAL INCOME Billion Dollars	14 DISPOSABLE INCOME Per Capita 1953 Dollars	15 CORPORATE PROFITS AFTER TAXES Billion Dollars
49.4	11.01	33.2	894\$	1.9
46.3	22.08	63.5	934	5.7
47.4	26.30	66.8	838	3.9
43.1	22.18	52.8	730	0.0
44.2	25.03	82.5	1,059	8.4
42.1	23.25	73.7	977	2.5
40.5	20.87	63.0	928	-1.3
38.3	17.05†	47.8	794	-3.4
37.7	23.86	70.2	1,067	5.0
38.1	25.20	75.7	1,130	6.4
40.6	29.58	92.0	1,284	9.4
42.9	36.65	116.7	1,432	9.4
44.9	43.14	132.4	1,469	10.6
45.2	46.08	147.0	1,537	10.8
43.4	44.39	151.1	1,508	8.5
40.4	43.82	158.9	1,461	13.9
40.4	49.97	169.5	1,392	18.5
40.1	54.14	188.4	1,442	20.7
39.2	54.92	187.2	1,424	16.3
40.5	59.33	205.8	1,509	22.7
40.7	64.77	225.0	1,508	20.1
40.7	67.97	235.0	1,517	18.6
40.5	71.50	247.9	1,552	19.5
41.0	71.48	245.4•	1,560•	20.3•
40.7	71.39	247.7•	1,559•	20.8•
40.2	71.40	249.8•	1,553•	19.6•
40.2	71.76	249.3•	1,539•	15.4•
39.5	70.97	249.8•	1,537•	18.0•
39.3	70.87	→ 249.5•	→ 1,340•	17.8

PRODUCTION

16 INDUSTRIAL PRODUCTION (PHYSICAL) Index	17 ELECTRIC POWER PRODUCTION Billions kWh	18 BUILDING PERMITS 100 Cities Million \$	19 EXPENDITURES FOR PLANT & EQUIPMENT Billion Dollars	20 GROSS NATIONAL PRODUCT Billion Dollars
33	...	735	...	38.5
39	...	1,181	...	77.9
41	56.6	1,256	...	86.2
31	53.1	1,493	...	70.3
59	116.7	2,490	9.2	104.4\$
49	114.6	1,408	7.6	91.1
40	109.4	1,006	4.7	76.3
31	99.4	336	2.6	58.5
58	161.3	1,029	5.5	91.1
67	179.9	1,104	6.5	100.6
87	208.3	1,196	8.2	125.8
106	233.1	644	6.1	159.1
127	267.5	419	4.5	192.5
125	279.5	709	5.2	211.4
107	271.3	1,028	8.7	213.6
90	269.6	2,089	14.8	209.2
100	307.4	2,470	20.6	232.2
104	336.8	3,111	22.1	257.3
97	345.6	3,131	19.3	257.3
112	388.7	4,466	20.6	285.1
120	432.3	3,654	25.6	328.2
124	463.1	3,523	26.5	346.1
133	516.5	4,034	28.4	364.9
134*	124.8	883	6.3	361.8•
136*	126.2	1,143	7.3	369.9•
134*	131.3	1,079	7.1	367.2•
129*	131.1	929	7.7	360.5•
124*	131.5	948	6.2	355.8•
125*	131.4	1,119	7.0	354.5•

1914
1919
1920
1921
1929
1930
1931
1932
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
I
II
III
IV
I
II

FEDERAL

30 FEDERAL RECEIPTS Million dollars	31 FEDERAL EXPENDITURES Million dollars	32 GROSS FEDERAL DEBT Billion dollars
735	735	1.2
5,152	18,515	25.5
6,695	6,403	24.3
5,625	5,116	24.0
4,033	3,299	16.9
4,178	3,440	16.2
3,190	3,652	16.8
2,006	4,535	19.5
5,103†	8,966†	40.4
5,265	9,183	43.0
7,227	13,387	49.0
12,696	34,187	72.4
22,202	79,622	136.7
43,892	95,315	201.0
44,762	98,703	258.7
40,027	60,703	269.4
40,043	39,289	258.3
42,211	33,791	252.3
38,246	40,057	252.8
37,045	40,167	257.4
48,142	44,633	255.2
62,129	66,145	259.1
65,218	74,607	267.4
21,042	17,519	264.5
16,973	20,591	266.1
13,917	18,229	273.0
12,536	17,287	275.2
24,100\$	15,320\$	270.2\$
19,250	16,090	271.3

FINANCE

33 CONSUMER CREDIT Outstanding Billion dollars	34 LOANS OF COMMERCIAL BANKS Billion dollars	35 CURRENCY OUTSIDE OF BANKS Million \$	36 DEMAND DEPOSITS ADJUSTED Million \$	37 INTEREST ON BUSINESS LOANS Per cent
...	13.2	1,533	10,082	...
...	22.4	3,593	17,624	6.58
...	28.1	4,105	19,616	6.68
...	26.1	3,677	17,113	5.53
6.4	35.7	3,557	22,809	5.83
5.8	34.5	3,605	20,967	4.85
4.8	29.2	4,470	17,412	4.30
3.6	21.8	4,669	15,728	4.71
7.2	17.2	6,401	29,793	2.10
8.4	18.8	7,325	34,945	2.10
9.2	21.7	9,615	38,992	2.00
6.0	19.2	13,946	48,922	2.20
4.9	19.1	18,837	60,803	2.60
5.1	21.6	23,505	66,930	2.40
5.7	26.1	26,490	75,851	2.20
8.4	31.1	26,730	83,314	2.10
11.6	38.1	26,476	87,121	2.10
14.4	42.5	26,079	85,520	2.50
17.1	43.0	25,415	85,750	2.70
20.8	52.2	25,398	92,272	2.70
21.5	57.7	26,315	98,234	3.10
25.8	64.3	27,494	101,500	3.50
28.9	68.3	28,091	103,300	3.70
25.9	65.2	26,900	97,400	3.54
27.4	65.5	27,369	97,200	3.73
28.0	66.5	27,500	98,100	3.74
28.9	68.3	28,091	103,300	3.76
27.2	67.1	26,900	96,700	3.72
27.6	66.9	27,000	98,000	3.72

FAILURES

38 BUSINESS FAILURES Number	39 LIABILITIES OF FAILURE Million \$
18,280	357.9
6,451	113.3
8,881	295.1
19,652	627.4
22,909	483.3
26,355	668.3
28,285	736.3
31,822	928.3
14,768	182.5
13,619	166.7
11,848	136.1
9,405	100.8
3,221	45.3
1,222	31.7
810	30.2
1,130	67.3
3,476	204.6
3,252	234.6
9,246	308.1
9,162	248.3
8,058	259.4
7,611	283.3
8,862	394.2
2,077	81.7
2,207	92.7
2,110	102.2
2,468	117.6
2,895	134.6
2,834	127.9

1914
1919
1920
1921
1929
1930
1931
1932
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
I
II
III
IV
I
II

†Figures for this and prior dates are from another source and are not strictly comparable with later data.
‡Beginning in 1937 tax refunds are deducted from receipts and are not included among expenditures.
•Annual rate seasonally adjusted. *Quarterly figures seasonally adjusted. \$Series revised from this date.



Every day some 11,000 travelers arrive in New York by air. When their plane wings in over lower Manhattan, this dramatic, bird's-eye view of the city's financial center is spread out before them.

Here is the head office of the Chase National Bank where scores of businessmen and bankers from out of town are welcomed every day.

At Chase these visitors find officials who are familiar with

trade developments and business methods in foreign markets as well as in all parts of the United States. They also find in New York a network of Chase branches whose staffs are in touch with the diverse business interests and enterprises of the city.

Chase stands first in loans to American industry, and for many years has also been number one in correspondent bank relationships. Almost half of the banks in the country which

maintain banking connections in New York have selected the Chase National as depository.

If you are considering a New York banking connection, why don't you talk to the people at Chase?

THE Chase

NATIONAL BANK
OF THE CITY OF NEW YORK

HEAD OFFICE: Pine Street corner of Nassau
Member Federal Deposit Insurance Corporation

12 per cent below a year ago, compared with a fractional gain among soft-goods manufacturers and declines of 5 per cent in wholesaling, and 2 per cent in retailing.

Manufacturers' inventories fell below year-ago levels this Spring for the first time in nearly four years. In relation to current sales volume, manufacturers had an estimated 3.2 months' stocks on hand at the end of June, compared with 3.3 months' a year previously (Compass Point 29).

Judging from the levels of output in industries which use large quantities of steel (construction, fabricated metals, oil well drilling), steel consumption in the first half of 1954 declined much less than the levels of output might indicate. It has been suggested that the tonnage of steel consumption in the first half of 1954 was about at the rate in 1952, or about 8 per cent higher than current production. The difference apparently came out of steel inventories, which were larger than it was earlier suspected. The continuance of first-half levels of steel consumption would seem inevitably to result in an expansion in steel production.

Building Ever Higher

Expenditures for new construction are expected to reach a record high of \$36 billion in 1954, some 2 per cent above the previous record in 1953. This revised estimate, prepared by the Departments of Commerce and Labor, is noticeably more optimistic than that suggested last November when a decline of 2 per cent in 1954 construction volume was anticipated.

Construction outlays in the first half of 1954 surpassed all expectations; at \$16.6 billion, they were 2 per cent higher than in the comparable period of 1953.

It is thought that 1,080,000 new housing units will be started this year, 2 per cent fewer than in 1953. For 1954 as a whole, private spending for residential construction is expected to be 2 per cent higher than in 1953. While industrial building outlays may drop 13 per cent, commercial construction is expected to rise 20 per cent. Notwithstanding declines of 37 per cent in public housing projects and 20 per cent in military and naval construction, total public

spending for new construction is expected to rise 4 per cent above 1953 levels.

Price Stability

Although price cuts accompanied the efforts to reduce inventories in many lines, the over-all inventory contraction was accomplished without sweeping changes in the general level of prices (Compass Points 7, 8, and 9). The Government farm price supports and the stockpiling of some agricultural products and strategic metals were important stabilizing influences. And the incorporation of higher wage rates in the fixed cost structure in many industries lessened the feasibility of price cutting.

The wholesale price average in the second quarter of 1954 was fractionally above that in the comparable period of 1953 and within 4 per cent of reaching the annual high for 1951. While the prices paid at retail continued to edge downward, the cost of living remained slightly above a year ago, mainly because of higher service charges.

Personal Spending Up

Consumer expenditures for both goods and services advanced in the second quarter of 1954, boosting total personal outlays for consumption to a level slightly above the peak annual rate of \$231 billion reached in the third quarter of 1953.

Largely because of a recovery in automobile buying, spending for durable goods rose somewhat above the first-quarter rate. A slight rise in soft-goods sales, concentrated in general merchandise stores and eating and drinking places, reflected a mild advance in consumer outlays for non-durable goods.

Incomes Sustained

Personal after-tax income in the second quarter of 1954 was almost as high as the first-quarter peak and slightly exceeded the year-ago level (Compass Point 13). The reduction in tax rates in 1954 more than offset the effects of lower-than-a-year-ago wage and salary payments in the commodity producing and distributive industries. Stability in employment and wage rates was maintained, although unemployment continued above 1953 levels (Compass Points 3, 11, 12).



...only Executone combines **BOTH!**

IN THE WORLD'S MOST ADVANCED INTERCOM SYSTEM!

• For the first time in any intercom system you can answer calls from across the room—and at the same time enjoy positive assurance that no one can eavesdrop on conversations in your office. Executone's exclusive "CHIME-MATIC"® signalling announces every call with chime and signal light—warns that your circuit is open.

SAVE TIME—get more work done!

Thanks to Executone's "Remote Reply", employees can now answer calls without interrupting their work. You get instant response without loss of working time. You eliminate waiting and costly "call backs" when phones are

busy. Roving employees are located quicker. You give instructions, get information without delay, yet you have "privacy protection" at all times. Work flows smoothly. Every hour becomes more productive! Executone soon pays for itself in many ways. Ask for full details. No obligation.



Executone INTERCOM SYSTEMS

GET THE FACTS

EXECUTONE, INC., Dept. H-1 • 415 Lexington Ave., New York 17, N. Y.

Without obligation, please send me full data on Executone Intercom. I am particularly interested in:

- ☐ INTER-OFFICE COMMUNICATION
- ☐ INTRA-PLANT COMMUNICATION
- ☐ SWITCHBOARD RELIEF
- ☐ LOCATING PERSONNEL

Name.....

Title.....

Firm.....

Address.....City.....

In Canada . . . 331 Bartlett Ave., Toronto.



WHAT YOU DO **RIGHT NOW** IS MIGHTY IMPORTANT

That moment when he hits . . . if you don't set the hook hard and firm, you'll never see him in the boat. And *this* moment in business . . . now's the time to give yourself the competitive edge that means so much when the going is tough. • Allegheny Metal can reduce costs, add strength, increase service life, improve appearance, cut weight, overcome rust. How many of these properties of stainless steel can you use to advantage, and how can we help you to do so? *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pennsylvania.*

You can make it **BETTER** with
Allegheny Metal

Warehouse stocks carried by all Ryerson Steel plants



W&D 47198



Sources of the Statistical Data

CENSUS 1. POPULATION: U. S. Bureau of the Census, mid-period estimates of total population including armed forces overseas—2. NAMES IN REFERENCE BOOK: *Dun & Bradstreet, Inc.* annual totals from July Book, other from Book nearest the end of the quarter.

EMPLOYMENT 3. CIVILIAN EMPLOYMENT: U. S. Bureau of the Census, data prior to 1929 from *National Industrial Conference Board*; monthly averages of noninstitutional population 14 years of age and over who were at work, temporarily absent because of sickness, strike, or vacation, or with instructions to report for work within 30 days—4. AGRICULTURAL EMPLOYMENT: U. S. Bureau of the Census, data prior to 1929 from *National Industrial Conference Board*; monthly averages of those employed in agriculture—5. NONAGRICULTURAL EMPLOYMENT: U. S. Bureau of the Census, data prior to 1929 from *National Industrial Conference Board*; monthly averages of those employed outside of agriculture—6. UNEMPLOYMENT: U. S. Bureau of the Census; monthly averages of those not at work but looking for work, also includes those who would have sought work except for temporary illness, belief that no work existed, or waiting to return from an indefinite lay-off.

PRICES 7. CONSUMERS' PRICES: U. S. Bureau of Labor Statistics; Revised series; average cost of some 300 goods and services purchased by moderate income families, as a per cent of the 1947-1949 level—8. RETAIL PRICES: U. S. Office of Business Economics, based upon data collected by other Government agencies; average prices at retail stores as a per cent of the 1935-1939 level—9. WHOLESALE PRICES: U. S. Bureau of Labor Statistics; average wholesale prices of some 2,000 items as a per cent of the 1947-1949 level—10. INDUSTRIAL STOCK PRICE AVERAGES: *Dow-Jones & Company*; daily average of the prices of 30 industrial stocks.

INCOME 11. WEEKLY HOURS: U. S. Bureau of Labor Statistics; average workweek for production workers, includes hours worked in overtime—12. WEEKLY EARNINGS OF INDUSTRIAL WORKERS: U. S. Bureau of Labor Statistics; average for production workers before any payroll deductions, reflects length of work week and hourly earnings—13. DISPOSABLE PERSONAL INCOME: U. S. Office of Business Economics; personal income remaining after deduction of taxes and of non-tax payments to government such as fines, licenses—14. DISPOSABLE INCOME PER CAPITA, 1953 DOLLARS: Compiled by dividing Series 13 by the items in Series 1 and adjusting results for changes in Consumers' Prices, Series 7—15. CORPORATE PROFITS AFTER TAXES: U. S. Office of Business Economics; total corporate profits after deducting all tax liabilities.

PRODUCTION 16. INDUSTRIAL PRODUCTION (PHYSICAL): *Federal Reserve Board*; average physical volume of manufacturing and mining output as a per cent of the 1947-1949 level—17. ELECTRIC POWER PRODUCTION: *Federal Power Commission*; total pro-

duced by utilities and industrial establishments excluding hotels, office buildings, and other commercial establishments—18. BUILDING PERMITS, 120 CITIES: *Dun & Bradstreet, Inc.*; total value of permits issued in 120 reporting cities—19. EXPENDITURES FOR PLANT AND EQUIPMENT: U. S. Department of Commerce and Securities & Exchange Commission; totals for private industry excluding agriculture—20. GROSS NATIONAL PRODUCT: U. S. Office of Business Economics; total market value of all goods and services produced by the economy before any deductions for depreciation.

SALES 21. FARM INCOME: U. S. Bureau of Agricultural Economics; total receipts from farm marketings, CCC loans, and Government payments—22. EXPORTS: U. S. Bureau of the Census; total of all merchandise—23. IMPORTS: U. S. Bureau of the Census; total of all merchandise—24. RETAIL SALES: U. S. Office of Business Economics and Bureau of the Census; data prior to 1929 from Kuznets "National Income and Its Composition"; total sales of all retail stores—25. WHOLESALE SALES: U. S. Office of Business Economics; total sales of all wholesalers—26. MANUFACTURING SALES: U. S. Office of Business Economics, data prior to 1929 from Kuznets "National Income and Its Composition"; total of all manufacturers' sales.

INVENTORIES 27. RETAIL INVENTORIES: U. S. Office of Business Economics; book value at end of period—28. WHOLESALE INVENTORIES: U. S. Office of Business Economics; book value at end of period—29. MANUFACTURING INVENTORIES: U. S. Office of Business Economics; data prior to 1929 from Kuznets "National Income and Its Composition"; book value at end of period.

FEDERAL 30. FEDERAL RECEIPTS: U. S. Treasury Department; annual totals are for fiscal years, quarterly totals are for calendar quarters—31. FEDERAL EXPENDITURES: U. S. Treasury Department; annual totals are for fiscal years, quarterly totals are for calendar quarters—32. GROSS FEDERAL DEBT: U. S. Treasury Department; annual figures are at end of fiscal years, quarterly figures are at end of calendar quarters.

FINANCE 33. CONSUMER CREDIT: *Federal Reserve Board*; total consumer credit outstanding at end of period—34. LOANS OF COMMERCIAL BANKS: *Federal Reserve Board*; volume of loans outstanding from all commercial banks at end of period—35. CURRENCY OUTSIDE OF BANKS: *Federal Reserve Board*; volume outstanding at end of period—36. DEMAND DEPOSITS ADJUSTED: *Federal Reserve Board*; total at end of period excluding interbank and Government deposits and cash items in the process of collection—37. COMMERCIAL LOAN RATES: *Federal Reserve Board*; annual rates on short-term loans in 19 cities including New York.

FAILURES 38. BUSINESS FAILURES: *Dun & Bradstreet, Inc.*; total number of industrial and commercial failures—39. LIABILITIES OF FAILURES: *Dun & Bradstreet, Inc.*; total current liabilities excluding long-term publicly held obligations.

Kentucky steel plant reports:

"Our PLYMOUTH works 16 hours a day—hauls 60 cars daily—is real 'work horse' "



This Plymouth 40 ton Diesel, Model MDT, owned by Green River Steel Corporation, is used for intra-plant hauling and switching at their Steelton, Ky. mill.

Mr. Reheis, General Traffic Manager, will tell you he likes his Plymouth for several reasons—its efficiency, its economy and its remarkably low upkeep expense. Purchased 1½ years ago, this Plymouth hauls as many as 60 cars a day (15 empties, 10 loaded) to feed the steel-making furnaces with scrap iron, fire brick, Dolomite, lime, limestone, carbon electrodes, slag and coke. Time lost for repairs in these 18 months of service has amounted to only 6 days . . . in spite of a two-shift schedule 7 days a week!

In the words of Mr. Reheis, "Our Plymouth has proved highly satisfactory. Its low center of gravity and exceptional visibility make a big hit with the operator. We believe it is a fine asset—efficient, economical—a real 'work horse.' "

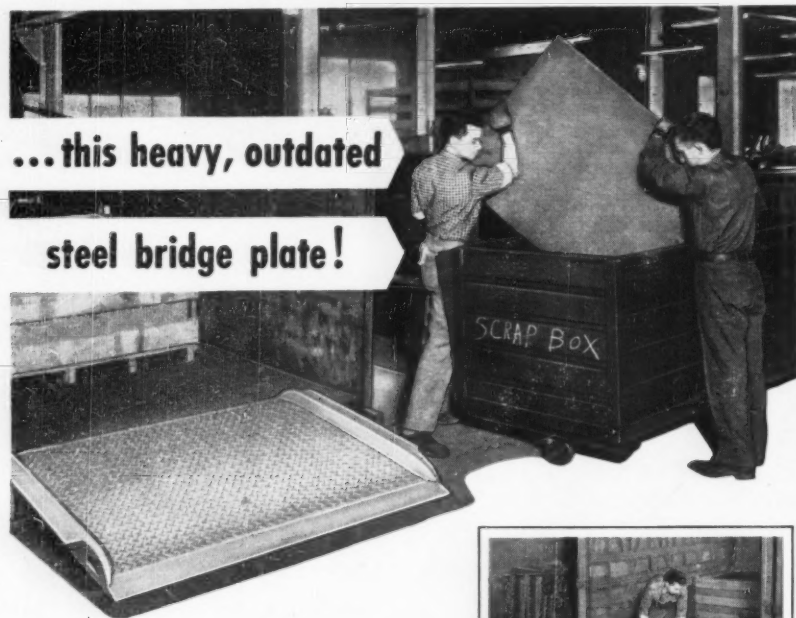
There's a Plymouth designed to improve your hauling problems, too. Models from 3 to 70 tons, Gasoline, Diesel, Diesel-Electric, mechanical or Torquemotive Drive*. Write for catalog. PLYMOUTH LOCOMOTIVE WORKS, Division of THE FATE-ROOT-HEATH COMPANY, Dept. A-19, Plymouth, Ohio.

PLYMOUTH® TORQOMOTIVES

*Torquemotive Drive: Plymouth transmission with hydraulic torque converter.



**the *MOST EXPENSIVE EQUIPMENT*
this firm had on its dock was —**



**...this heavy, outdated
steel bridge plate!**

The initial cost of this heavy steel plate was very little, but through the years it has cost this firm many times its original price! It wasted valuable man-hours, created loading bottlenecks, caused accidents and equipment-load damage. It definitely became the most expensive equipment on the dock!

But not any longer! Now it is being replaced by a light, strong Magliner magnesium dock board, engineered to the specific requirements of this dock and loading operation. Made of the world's lightest structural metal for easy, one-man handling, Magliner magnesium Dock Boards will eliminate costly bottlenecks, and speed shipping-receiving operations. They introduce new, greater efficiency to dock handling, and provide years of safe, dependable and economical service.

Don't let inadequate dock board equipment penalize your operation and drain company profits! It will pay you to get the facts about Magliner dock boards today.



**Write for Your Copy
of DB-204 Today!**

Magliner
MAGNESIUM

DOCK BOARDS

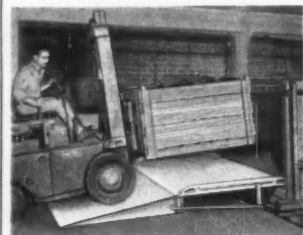
"Wherever Dock Boards are Used—Magliners are Preferred"

MAGLINE INC. • P. O. BOX 350 • PINCONNING, MICHIGAN

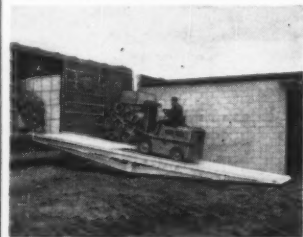
Canadian Factory: Magline of Canada, Limited, Renfrew, Ontario



MAGNESIUM LIGHT!
Easy One Man Handling



MAGNESIUM STRONG!
To Fully Meet Your Equipment-
Load Requirements



**MOBILE LOADING
RAMP**

A loading dock on wheels! Services yard cars or highway trailers. One man moves it. Write for Bulletin DB-211.

for Rail or Truck

VOICE OF BUSINESS

*Weapon of to-day:
Economic knowledge*



*"Industry has been
guilty of the sin of
omission . . ."*

WILLIAM H. WARD

*Vice President, E. I. du Pont de Nemours & Co., before Members Council
New Orleans Chamber of Commerce.*

Our enemies know well the importance of productive capacity in the world to-day, and against American industry they have sought to bring two powerful weapons—ignorance and lack of understanding. The American people must recognize the true source of their economic security and the

part that industry plays in it. Unless they guide their efforts so that this security can be cultivated and protected, they are in peril of defeating their own ends. If, in their confusion, they unwittingly do things that hamper and stultify the true source of security, the result could be so disastrous that there would be security for no one. The economic laws, like the laws of nature, have no regard for motive. They function inexorably to penalize those who violate them, regardless of intention, and regardless of whether the violation comes through wilfulness or ignorance. The tragedy would be no less complete because those who brought it about were seeking the exact opposite result. Industry has been guilty of the sin of omission with respect to acquainting people with the facts. Some politicians, intellectuals, and labor leaders have been ham-

**Question: How can you
double your distributor's
stock without
credit risk?**

Answer: If credit limitations are keeping your distributors from carrying adequate stocks at peak seasons, let us show you the Field Warehousing plan now used by many leading manufacturers. It permits you to retain legal title to the merchandise, doubles the distributor's credit without additional risk to your company, acts as a collection control and supplies accurate 30-day inventory records. A call will bring a qualified representative with complete information.

NEW YORK TERMINAL WAREHOUSE COMPANY
25 South William Street, New York 4, N. Y.
OPERATING OFFICES IN PRINCIPAL CITIES



LET'S START WITH THE CAUSES OF *DERMATITIS*

Costly dermatitis can be prevented. By getting at the basic causes. We can help you by analyzing the work your employees do, checking for hazards our experience tells us might cause dermatitis. We'll check the care given their hands. Then we'll compare your present protective treatments with the skin care methods we've found to be best during our many years of controlling industrial dermatitis.

Where it is necessary, we offer consultation with specialists. Complete chemical and bacteriological analysis.

After these preliminaries we can help you set up a *continuing program* for dermatitis control. Provide leaflets and posters to help educate employees. Assist you in choosing the particular products from West's broad line that will best apply to your situation. At the right are a few examples.



West's broad line of products includes not only cleaners, soaps, and protective creams but also washroom service . . . disinfectants . . . deodorants . . . insecticides . . . floor maintenance materials. West is also the exclusive distributor of Kotex Sanitary Napkins sold through vending machines.

42-16 West Street, Long Island City 1, N. Y.



Let's see how WEST products control dermatitis

West's complete line of sanitation products includes hand cleaners, protective creams, antiseptic soaps and protective garments. Everything you need for effective control of dermatitis. Here are a few of them.

LAN-O-KLEEN



is a heavy duty powdered hand cleaner. Contains a relatively high percentage of "free" lanolin, the emollient lecithin, soap, and a secret process in a fine corn meal base. Provides both super-fattening and effective cleaning.

ANTISEPTIC SULPHO HAND CLEANER



contains bacteriostatic properties. Will not defat the skin. Excellent skin cleaner even for sensitive hands. Offers protection against many harsh chemicals and other materials used by people in industry and institutions.

ANTISEPTIC PROTECTIVE CREAMS



contain bacteriostatic properties. Formulated to provide protection against almost every occupational hazard. Used by thousands of workers throughout the United States and in Canada.

WANT DETAILS?

*Tear out this coupon and
mail with your letterhead*

Dept. 1

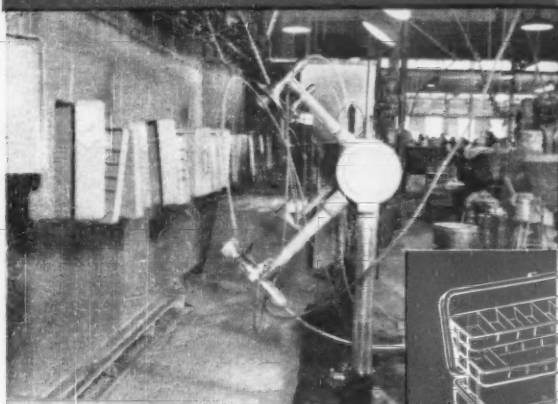
I'm interested in:

☐ A FREE booklet packed with information on dermatitis and helpful tips on skin care.

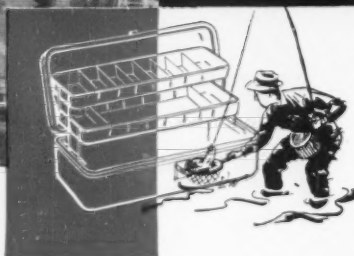
☐ A talk with a West specialist about my dermatitis problem. No sales pitch. No obligation. Just discussion, a look at samples, and a demonstration if I want it.



World's Largest Manufacturer of
Tackle Boxes and Minnow Buckets uses the
World's Finest Electrostatic Paint Spray



THE RANSBURG NO. 2 PROCESS



Four 3" Atomizing heads are used in the Ransburg No. 2 unit to paint fishing tackle boxes in the Stratton & Terstegge plant in Louisville, Kentucky.

● Stratton & Terstegge Co., Inc., in Louisville, is the world's largest producer of fishing tackle boxes and minnow buckets. Their products—in a variety of styles and finishes—are sold under the trade names of "My Buddy" and "Falls City."

Originally, the company hand sprayed both exteriors and interiors of the tackle boxes. Then, in 1947 efficiency was stepped up when they installed a Ransburg No. 1 Process to coat the box exteriors.

Now, Stratton & Terstegge uses the Ransburg No. 2 Electrostatic Paint Spray which enables them to achieve even further efficiency. Paint savings amounts to 25%, and production is increased 10% with the Ransburg No. 2 over the No. 1 Process! Rejects are practically nil . . . quality of the work is improved . . . clean up time and maintenance is cut to a minimum . . . there's no compressed air to worry about, for the paint particles are electrostatically atomized with the Ransburg No. 2.

Although labor and material costs have increased substantially the past two years, the improved and more efficient plant operations have enabled this company to continue to produce their products at NO increase in price to the ultimate consumer.

Want to know how the Ransburg No. 2 can help cut costs in your painting department and still provide a higher quality and more uniform finish? Write for our brochure which shows numerous on-the-job examples of the Ransburg No. 2 Process.

Ransburg ELECTRO-COATING CORP.
Indianapolis 7, Indiana

RANSBURG

mering at the rank and file of Americans for decades, pounding home the idea that the two best friends the average man has are the Government and the labor unions. At the same time they stigmatized industry as selfish, predatory, and basically anti-social. The battle was allowed to go by default, even though the facts lay on the side of industry.

If all of us will create local understanding of what we are doing—how we do it—why we do it—and make clear who profits thereby—the cumulative effort will be irresistible. The situation demands the best efforts of all of us.

The need for an atomic philosophy



JOHN JAY HOPKINS

Chairman of the Board and President, General Dynamics Corporation, before Economic Club of New York.

"... it has presented us with the key to a 'Pandora's Box'."

The atomic age provides us not only with an "Open Sesame" to the treasure house of the world's natural wealth—with classic irony, it has presented us also with the key to a "Pandora's Box" of the world's ills and evils. We already have in being a rapidly growing atomic technology. We are beginning, though somewhat faintly, to foresee the *economy* of this new era. But we lack a vigorous exposition of the *philosophy* of the atomic age.

Confronted with the dissolution of traditional physical forms, the pulverization of matter, and the need to understand our new world not as a world of things and events, but as a universe of infinite and fluid relations, the danger is that we may lose entirely any sure sense of being in touch with reality. We may, indeed, under a panic urgency to "do something"—do anything, and so precipitate disaster.

(But) let us not be discouraged by the complexities of the current but only apparent transmutation of our physical world, but rather let us be encouraged by the boundless opportunities, the limitless possi-



How a 3¢ stamp can take a load off your mind



Free! Fire "DANGERater" tells in 30 seconds if your safe would incinerate your vital records . . . put you out of business!

Easy to use. Accurate. Authentic. Based on thousands of fires. Figures in over a dozen vital factors about *your* business. Dials answer, which may save you from ruin. Mail coupon for "DANGERater" now. Tomorrow might be too late!

↓ **Mail coupon now!**

The Mosler Safe Company Since 1948

32nd Street & Fifth Ave., New York 1, N. Y., Dept. DR-8
Please send me, FREE and without obligation, your new Mosler Fire "DANGERater."

NAME _____

POSITION _____

FIRM NAME _____

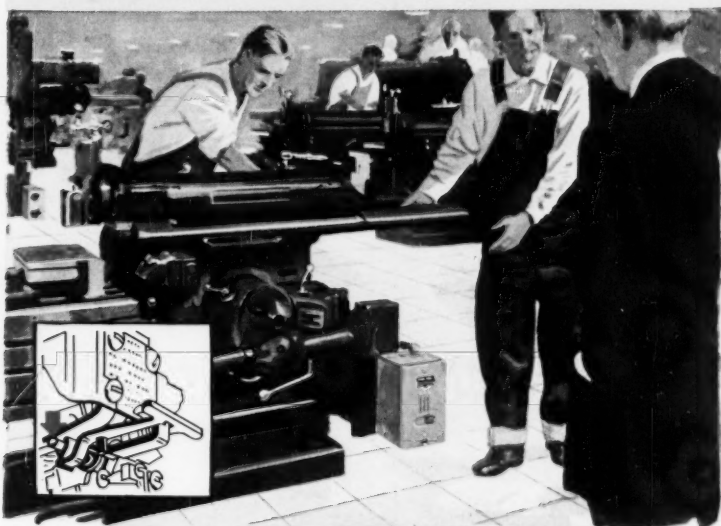
ADDRESS _____

CITY _____ ZONE _____ STATE _____

THE THREE CUTLER-HAMMER STARS ★ ★ ★ STAND FOR THREE NEW STANDARDS

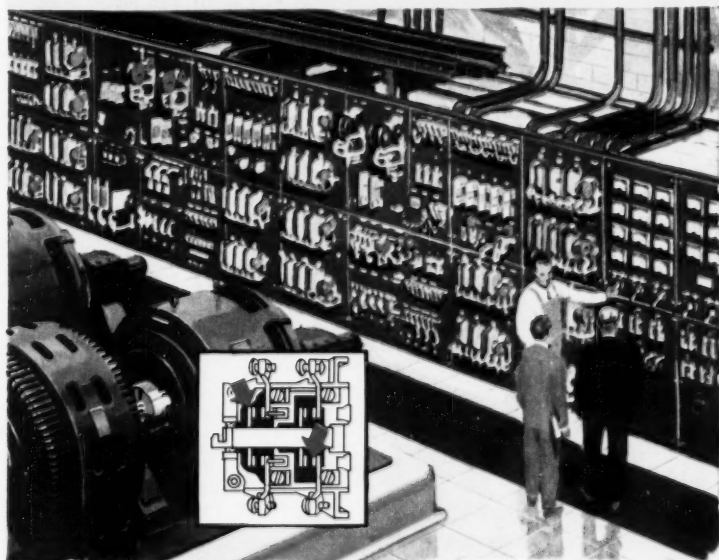
Rolling bearing action...

The proper performance and useful life of all modern machines demand anti-friction bearings. Motor control is no exception; it too must have good bearings to avoid wear and trouble.



Dust-safe vertical contacts...

Experienced engineers know vertical contacts work better and last longer because they stay clean, shed dust, do not collect it. Pressure arc quenching is important new C-H feature.



Cutler-Hammer Motor Control has always been respected for its long life. It has frequently been chosen for industry's "killer" jobs by comparative test. Many users say, "I have never seen a Cutler-Hammer starter wear out." Yet the new Cutler-Hammer ☆☆☆ Motor Control has *three times* the life of the good equipment it replaces! Nearly unbelievable, but it IS true. Now motor control you can install and forget! Try it. Prove it. Your nearby Cutler-Hammer Authorized Distributor is ready to serve you. Order from him today. CUTLER-HAMMER, Inc., 1436 St. Paul Avenue, Milwaukee 1, Wisconsin.

★ *installs easier*

★ *works better*

★ *lasts longer*



Less bounce by the ounce...

Research showed contact bounce caused arcing, that reduced weight in moving contact members cut bounce and arcing. So new light-weight parts now remarkably lengthen contact life.



CUTLER-HAMMER ★ ★ ★ MOTOR CONTROL



Rotor revolves on this exclusive case-hardened hollow-steel shaft forming a virtually wear-proof bearing.

Will it last forever?...we don't know, yet!

The stationary hollow steel shaft, *exclusive* in Emerson-Electric 12" and 16" oscillating fans, is one of the main reasons why you can find these fans still "blowing strong" years beyond their 5-year guarantee.

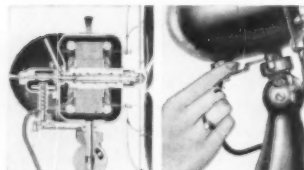
The unique single bearing formed by the case-hardened steel of this shaft and the porous cast-iron of the rotor core is the secret to such long life: with "forced feed" lubrication the surfaces of both acquire a fine glaze, like plated metal, which makes practically an ever-lasting bearing.

As a result, many of these fans are still in service after 25, 30 and even 40 years, making Emerson-Electric oscillators by far your best buy on cost-per-year basis.

THE EMERSON ELECTRIC MFG. CO.

St. Louis 21, Mo.

Forced feed lubrication—spiral oil grooves in the rotor core and spiral oil conveyor attached to floating worm shaft continuously circulate oil over bearing surface.



Fingertip oscillation adjustment—simply "dial" any 'sweep, from 90° to stationary.



Send for the new 1954 Fan Catalog today.
Ask for Catalog No. 787.

EMERSON **ELECTRIC**
FANS • MOTORS APPLIANCES

FREE FAN CATALOG

THE EMERSON ELECTRIC MFG. CO.
ST. LOUIS 21, MO.

Send us your illustrated
catalog for '54.

NAME.....
ADDRESS.....
CITY.....STATE.....

bilities, the marvelously expanding horizons of this new and still unfolding revolutionary atomic age.

Atomic energy taunts us with ideas of new world horizons. The challenge and the opportunity for world leadership are clear—but do we have the wisdom and the initiative and the daring to rise to meet them? And if we do not, we must then ponder the question—who might?

Managerial freedom for economic success



"Undue constraints diminish the capacity of industry."

EDWIN J. SCHWANHAUSER

Executive Vice President, Worthington Corporation, before Junior Executive Development Conference Series, Newark, N. J.

Managements must be free to use their energy, judgment, enterprise, imagination to the maximum. Undue constraints by government, by organized labor, by local communities, by shareholders—and note I say "undue" constraints—diminish the capacity of industry to deliver for the national good. Cartelism is bad because it limits the abilities of management and in the end produces incompetent managers. Socialism is bad for the same reason. The Russians are beginning to realize that Communist dictatorship is stultifying, too.

It is abundantly clear that the competitive, freely enterprising manager, using research to find new opportunities, using his native willingness to scrap the old for the sake of the new, the more efficient, and the better, accepting calculated risks for the sake of great rewards, has performed industrial miracles for the one nation where these forces have been freely employed; The United States of America. We have magnificent resources but these alone cannot explain our position to-day. It is released energies of our people that account for our great achievements. After all, a raw material is nothing until someone has devised a use for it.

ONE QUICK
STROKE!

Your load's ready
to ROLL...

with these Two New
Weld-Bilt Time-Savers

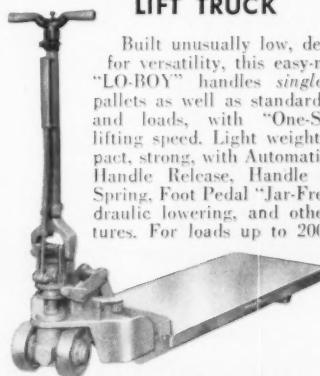
NEW "PAL-BOY" SINGLE STROKE MECHANICAL LIFT PALLET TRUCK

Amazingly easy to handle, lighter, smooth-rolling, new low-priced "Pal-Boy" is a great time-saver on single or double pallet loads up to 2500 lbs! ONE swift handle-stroke lifts your load to rolling position. New ball bearing booster rollers on each fork simplifies positioning under pallets. Has many new safety and load-saving features.



NEW "LO-BOY" MECHANICAL SINGLE STROKE LIFT TRUCK

Built unusually low, designed for versatility, this easy-moving "LO-BOY" handles single-faced pallets as well as standard skids and loads, with "One-Stroke" lifting speed. Light weight, compact, strong, with Automatic Free Handle Release, Handle Safety Spring, Foot Pedal "Jar-Free" hydraulic lowering, and other features. For loads up to 2000 lbs.

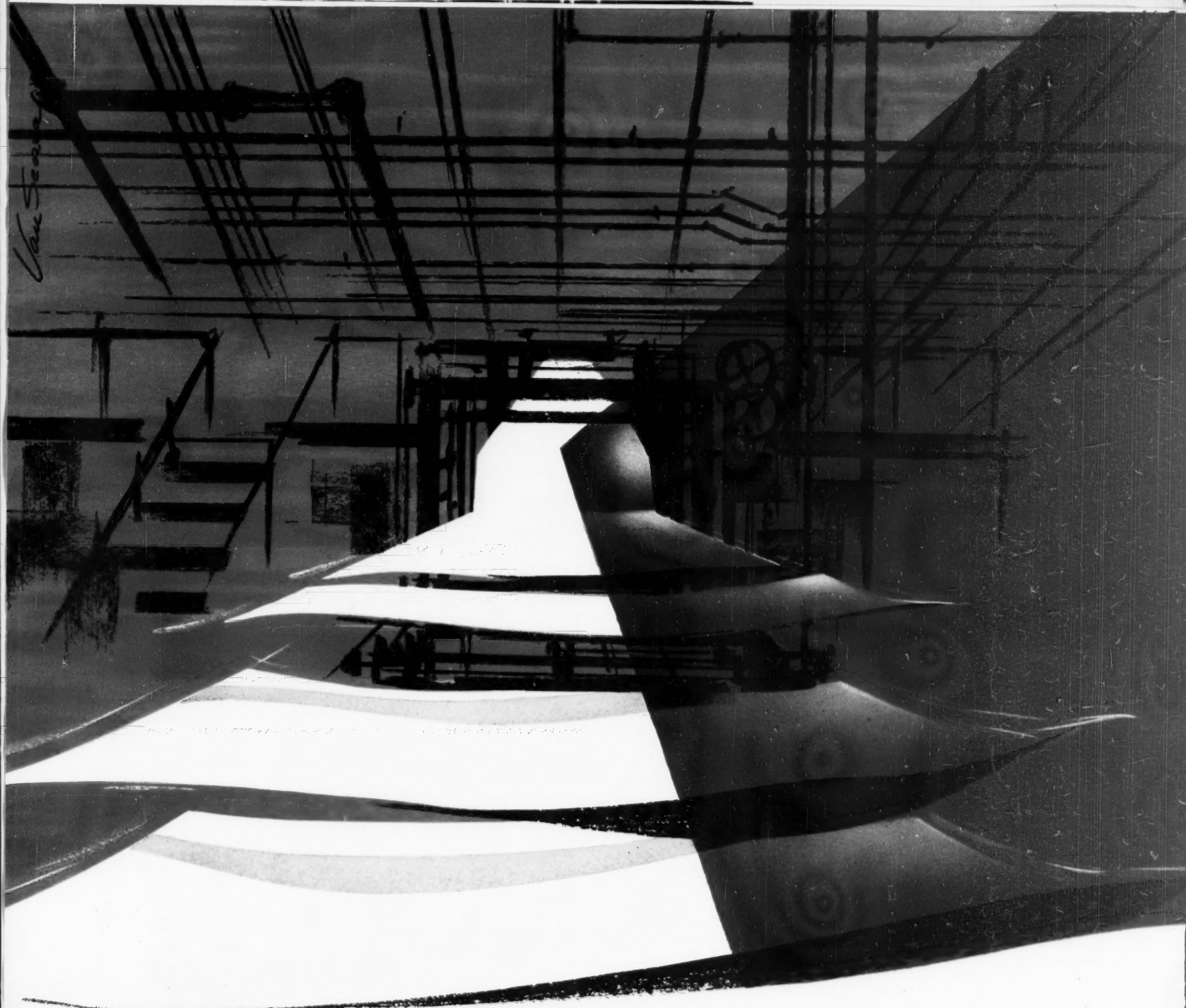


WIRE or write for new bulletin and low prices on these new Weld-Bilt SINGLE STROKE time-savers.

**WEST BEND EQUIPMENT
CORPORATION**

Materials Handling Engineers

303 WATER STREET, WEST BEND, WISCONSIN



PRESSES THAT PRINT MORE FOR YOUR MONEY

Printing faster lowers costs. Making one press do the work of two saves dollars too.

So Clement engineers are forever developing special methods . . . designing equipment which is unique in the printing industry.

One of many instances of this in Clement's four printing plants is a press so adaptable that a wide variety of jobs can be speeded through it to keep it productive 'round the clock. It prints in one, two, three or four colors, delivering 128-

page digest-size sections . . . or sheets to be folded in any size . . . either newsprint or slick magazine stock!

Any of the Clement offices listed below can show you many examples of how Clement saves time and money in the manufacturing of printing for America's best known businesses.

J. W. Clement Co. **Manufacturers of Quality Printing**

Executive Offices and Plant: 8 Lord Street, Buffalo 10, N. Y.

Sales Offices: Graybar Building, N. Y.; Fisher Building, Detroit

Subsidiaries: Pacific Press, Inc., Los Angeles. Phillips & Van Orden Co., San Francisco



8 LORD STREET, BUFFALO, N. Y.



249 ERIE STREET, BUFFALO, N. Y.



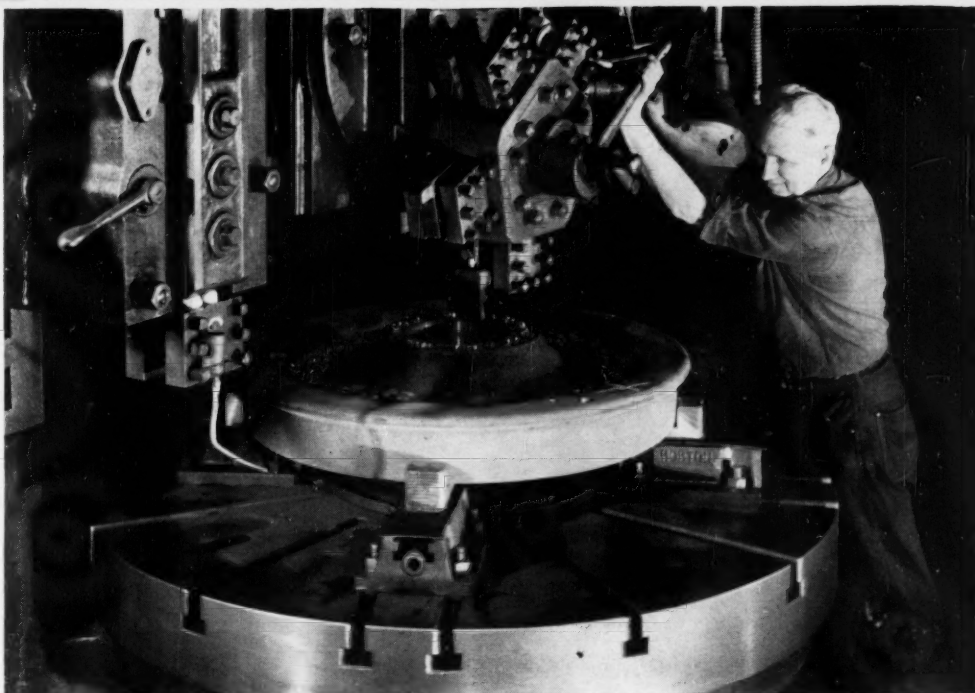
5201 SOUTH SOTO STREET, LOS ANGELES, CAL.



870 BRANNAN STREET, SAN FRANCISCO, CAL.



ARRETT.



DEVANEY PHOTOGRAPH

*M*ORE COMPANIES EACH YEAR ARE FACING THE DECISION OF WHETHER TO BUY OR LEASE CAPITAL EQUIPMENT. OF NECESSITY, EACH MUST ASCERTAIN THE ADVANTAGES AND DISADVANTAGES IN THE LIGHT OF ITS OWN PRODUCTION AND CAPITAL DEMANDS. BUT WHAT ARE THE POINTS THAT MUST BE CHECKED AND HOW ARE THEY TO BE EVALUATED? THIS ARTICLE ATTEMPTS A SEARCH INTO THE VARIOUS PROPOSALS AND THE POSSIBLE EFFECTS.

Equipment Leasing: PRO OR CON?

I. WAYNE KELLER
Controller, Armstrong Cork Co.

*F*OR THE first time in a number of years the productive capacity of industry in the United States is adequate to meet all foreseeable consumer demands. The buyer's market has returned. This change in the business atmosphere calls for a re-examination of many management policies and decisions, and important among these is the answer to the question, "Shall we lease or buy equipment?"

To-day, equipment-leasing plans are being promoted aggressively by both "rental" companies and by manufacturers and dealers. Obviously, the rental companies are being operated to earn a profit. The manufacturers and dealers who offer their products for lease, as well as for purchase, hope to achieve greater unit volume in addition to realizing an increment of profit on their leasing service. However, all lessors are performing a service which is of value to some lessees under certain conditions.

Each prospective lessee must study the advantages to him of leasing or purchasing equipment under current business conditions. Such studies will, in part, be based on measurable factors such as relative costs. In part they will be based on opinion and forecasts, such as the future requirements for working capital.

The first step is to determine that a proposal to lease equipment calls for leasing in fact as well as in name. The proposed lease agreements contain widely different terms, depending upon the type of equipment offered for lease and the

lessor's methods of operation. Some proposals are simply the familiar lease-purchase contracts under which, after a specified number of stated payments, title to the equipment passes to the lessee. Others are found to propose a rental for a term of years which approximates the useful life customarily assigned to such equipment. Under these, there is a clause granting the lessee the right to purchase the equipment at a nominal price upon the expiration of the lease. However, plans providing for title to the

equipment to pass to the lessee are suspect regardless of the terms or timing. This position is taken because the allowability of rentals under these as a cost for income tax purposes is considered to be very questionable. Also, treatment in the financial statements of the values of such equipment and the rentals to be paid on it presents many problems. Such values would probably have to be shown as an asset.

Bulletin No. 38 of the Committee on Account-
Continued on page 56

MACHINE TOOLS

Comparative Annual Costs per \$10,000 of List Price if Purchased or Leased

Year of Use	Average Book Value	ANNUAL COST IF OWNED			Total	Total After Tax at 52%	ANNUAL COST IF LEASED		
		Depreciation	Insurance	Interest on Average Book Value @ 3½%			Rental Before Tax	Rental After Tax at 52%	Net Profit Advantage of Ownership
1	\$9,667	\$ 667	\$ 36	\$ 338	\$1,041	\$ 500	\$ 3,900	\$1,872	\$1,372
2	9,000	667	36	315	1,018	488	3,000	1,440	952
3	8,333	667	36	292	995	477	2,100	1,008	531
4	7,666	667	36	268	971	466	1,600	768	302
5	6,999	667	36	245	948	455	1,200	576	121
6	6,332	667	36	222	925	444	800	384	-60
7	5,665	667	36	198	901	432	500	240	-192
8	4,998	667	36	175	878	421	360	173	-248
9	4,331	667	36	152	855	410	240	115	-295
10	3,664	667	36	128	831	399	100	48	-351
Total 10 Years		\$6,670	\$360	\$2,333	\$9,363	\$4,492	\$13,800	\$6,624	\$2,132



Which Traits Plague Your Men?

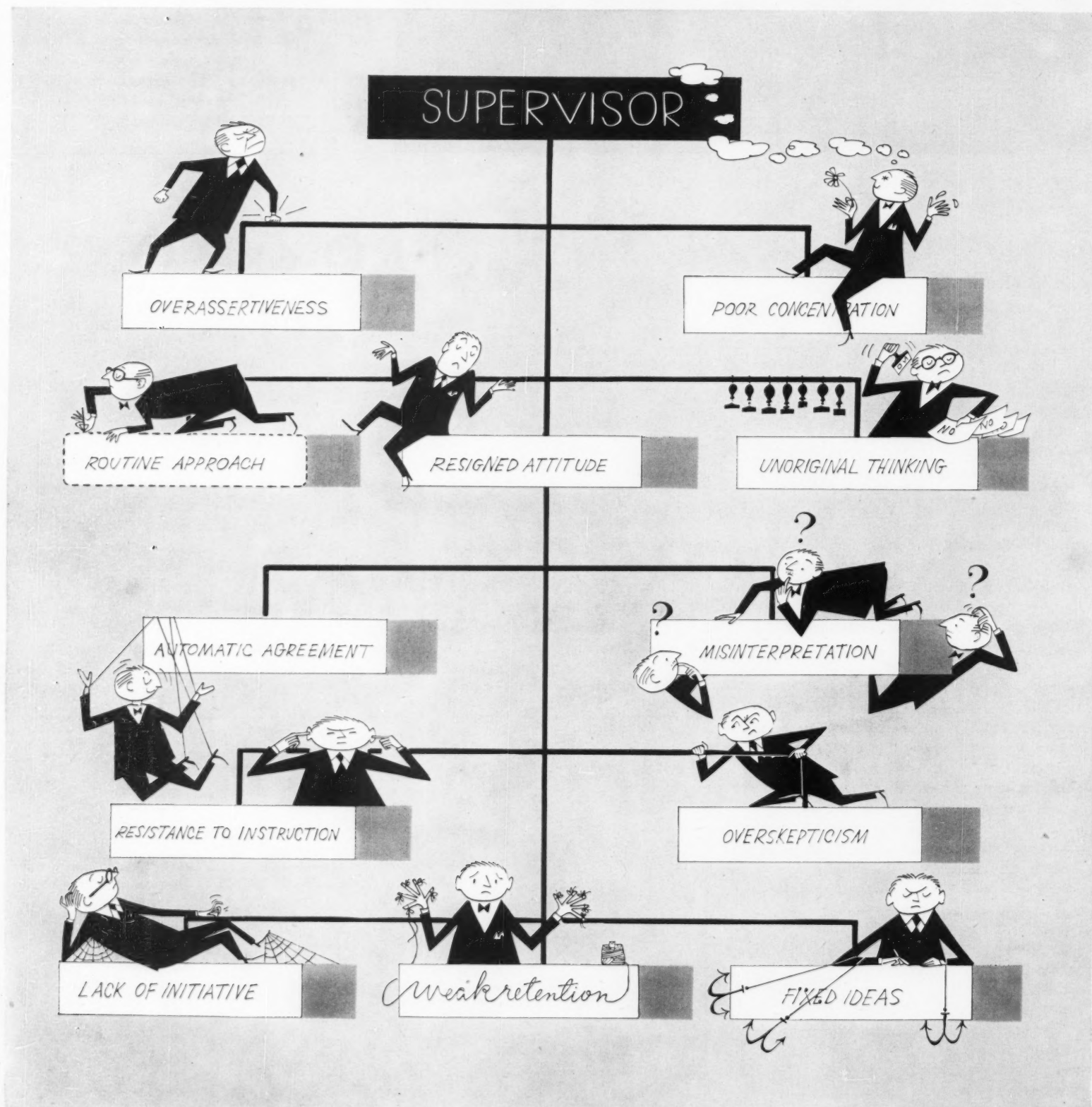
Below are some typical obstacles to learning. How
many trip your own subordinates?

CHECK



...and then

START READING



AVAILABLE: *Sharper Wits*

*Here's the way an executive helps muddled subordinates
grasp ideas more quickly and more firmly.*

MARGARET L. JONES
Executive Methods Editor

TRAINING won't train—in more cases than management stops to think about. Whether training be a formal or informal process, applied to many people or one person, guided by numerous staff training men or a sole line executive, it is undertaken to improve and *change* the individual.

But does it? Before you read further, check your subordinates' propensities for the human failings charted opposite. Then ask yourself if group training or individual coaching in their cases has been as helpful as you like to think.

In business, the objective of training must be to make an employee a better doer. He can be a walking encyclopedia, but unless his knowledge produces an insight into cause and effect, he will do some pretty dull-witted things from the viewpoint of stockholders and management. Within the ivy-bare walls of our industrial world, a high or low IQ is rightly defined by what an individual does, "for he who can and doesn't is just like he who can't."

Why is it that some executives are haunted by an intelligent subordinate who can—but doesn't? Why won't training stick to him? Why does he seemingly wish to frustrate his superior, balk change, and resist learning? To view this management problem properly, it is well to reconsider the process by which learning takes place.

Some of what follows below to explain this process is prompted by interviews with three training experts: Dr. Charles E. Bish, Associate Professor of Education, George Washington University; J. J. McCarthy, consultant, employee-relations training, General Electric; and Dr. Walter Mahler, president, Mahler Associates, management-development consultants.

The learning process, for anyone, takes place on levels. The deeper the levels go, the more chance a trainer has to affect the trainee's attitudes, values, and behavior—to change him, in other words. Over at General Electric, they express it something like this:

An employee is *told information*. He *reacts*

politely to it because he *respects the teller's experience*. He achieves a *surface understanding* of this knowledge, but *he does not change his behavior*. This is what happens on the first, or top, level of learning. At this point, a trainer has only started to train.

At the level beneath this one, an employee learns by *discussing information*. He *reacts with interest* because he *respects the teller's ideas* as well as his experience. This brings about a *deeper understanding* which causes him to *relate properly his data*, one with the other. Now the trainer has made a little progress.

Next, the employee reaches a level of learning where he can *refine his information* through the sieve of experiences and interpersonal relations. He experiences an *even deeper understanding* that gives him *insight to cause and effect*. He is beyond mere politeness or interest. His *reaction by now is one of motivation*:

He says, "I see what you are driving at"—and he does. With this reaction comes *respect for the trainer's motives*, besides the previous regard for his experience and ideas. The trainee glows with his new-found perception. His boss shines too, having at last found a younger brother under the skin.

The catch is, of course, that many superiors and subordinates don't arrive at this happy destination together. The subordinate gets lost somewhere in the process. As far as this man's superior can tell, any one of many human failings could have thrown him off:

A tendency toward poor concentration, for example, overskepticism, fixed ideas—or any one of the other mental obstacles to learning, opposite, that you checked off two minutes ago.

Consider one of these obstacles—the routine approach. Everyone knows that a man who relies on it robs his endeavors of the creativity necessary to produce top-grade management work. If Joe wants to lower his IQ, all he has to do is jump through a hoop eight hours a day. Actually though, is it Joe's unawareness of this fact that retards his progress in the office? Or

is he slow to create because of his boss?

The superior who says "Look, Joe, you are on your own in this situation, see what you can do," and then leaves him alone, is a rare leader among the many who follow up this invitation to creativity by getting Joe to do it *their* way, in the end.

Because of to-day's tendency to routinize *even on the management level*, men work, points out Dr. Charles Bish, not faster and not slower, but with a predetermined rhythm set by the company for which they work. Therefore, a prime responsibility of supervisors nowadays is to keep the company's "rhythm" from draining subordinates of creativity. But how many management men *personally* spend time enough fulfilling this responsibility to be able to say: "I did not put that obstacle to learning in Joe's way. He did it himself."

Almost nothing reduces the ability to learn more than a resigned, what's-the-use attitude. What's the matter with Joe anyway, that he doesn't bother to care? A doctor would ask him where he hurts; but a busy supervisor tends to make a one-way diagnosis more often than not: "Old Joe hasn't what it takes, I guess," or, "Poor Joe, he's too old to develop further."

Is Joe too old to learn new tricks? (Dr. Robert Ladd Thorndike's research experiments in adult education indicate that the ability to learn and to modify attitudes extends well beyond the school and college years. In fact, learning capacity does not reach its peak, according to the Thorndike Learning Curve, until the age area between 22 and 26. From here on, the top of the curve descends very, very little as the age increases.)

Since Joe is not too old after all, the supervisor's job is to find out where he hurts. To do this, the supervisor has even been given a method by scientific management: The counselling of subordinates after merit rating and evaluation.

The crux of the matter then is, how many or how few managers counsel personally, conscien-

tiously, and continually. Of the many possible counsellors, a large group of bosses prefer to "keep Joe on his toes" by making him guess how well, or how poorly, he is doing. Many more consider it adult to dismiss counselling as "childish." Joe is a grown man; he knows in which direction his performance is headed.

So Joe is confronted with a boss who establishes no pattern of personal reactions toward him. *Joe does not know where he stands.* Yet the very intangibility of management work, the slowness with which events may move to prove an executive's decision right or wrong, puts a high premium on the superior's effort to indicate that he thinks, because of his longer experience, that the subordinate is, or is not, on the right track. The subordinate, otherwise, may give up trying to profit from experience. He's "resigned."

But which has interfered with the learning process, the man's attitude or his boss's behavior? Similar questions may be asked whenever subordinates tend to the following:

Lack of initiative; unoriginal thinking. How many superiors manage to resist telling their men how to correct what they point out is wrong? If they don't, no one will try to think through a situation; all energy is focused instead on figuring out how the boss figures it.

Fixed ideas; automatic agreement. Though outwardly so different, both tendencies grow, don't they, in any place which won't tolerate mistakes? Yet, it is commonly agreed that mistakes shake up fixations which everyone inevitably brings with him from past experiences, training, and relationships. And it is also agreed that fear of a mistake coddles a "yes" man, when he is made to feel that one will cost him his livelihood.

Overassertiveness; overskepticism. Both are symptoms of a man's rigid need to defend himself. They also can be signs, can't they, that his work environment is insufficient to care for the normal human needs of security and status?

Resistance to instruction. It exists instinctively in everybody because it generally heralds change; and change suggests, "The old man's unhappy with what I am doing." The feeling of being threatened that results is motive enough to resist, as anyone knows.

But how careful is each supervisor to avoid this threatened feeling by giving advanced enough notice and sufficient reasons for the instruction? With how much *personal* interest does he convince a man that the instruction is part of a plan, formed for his own good?

More of such questions could be asked, if we continued to run down the list of human failings diagrammed on the other page. Obviously, however, each one would simply serve to re-emphasize the management fact that erupts as consistently as Yellowstone's Old Faithful—the fact that the pattern of behavior a supervisor follows can make, or break, a normally healthy and intelligent subordinate's progress.

In this particular case, the fact is illustrated

by the subordinate's learning process. He can come to a dead stop at any one of the levels of understanding discussed because a superior, not he himself, is responsible for the retardants that make him seem muddled. Most times, these retardants are overcome when the executive persistently finds time to perform functions that he already knows about. (See box below.)

There is still one more facet of the learning process to be considered, if training is to train. This is the shaking up of values. Though new perception is found by absorbing information through listening, discussing, and experiences, values can remain unchallenged.

So far, the man has applied his awakened perception to the other fellow's way of doing things. His concept of his own performance is still unshaken. But when perception gets under his skin enough to make him question his values, then the trainer is really beginning to make some interesting things happen, say the experts. The critical area of training behavior has been reached. Unfortunately, too many coaches stop short of this area, fooled by a sense of intimate harmony now established.

General Electric calls it the "Ouch!" area. "Ouch," the trainee cries, "I'm the guy you have been talking about. Say, are you trying to push me around after all!" Then he begins to exhibit escape behavior. He bucks, and disputes what he recently accepted: "Well, I agree with everything you've said, but there are exceptions. Now, take a type like Jay Silvers; my experience shows you have to treat 'em like this. . . ."

Escape behavior takes many forms. The important thing is to recognize it for what it is, to help the "rebel" save his face as he makes himself take this last, cold plunge into learning.

"Getting escape behavior patterns into the open," says Dr. Charles Bish, "is the grandest thing in the world. Don't be upset by them. People are beginning to feel the things you are teaching."

From here on in, the executive can get new values accepted, new attitudes created, and changes in behavior. He need not be, and should not try to be, a psychologist. But let him spend enough time on the human-management part of his responsibilities, and he will find that sharper wits are easily available for the picking.

HERE ARE SOME MENTAL LIFTS

When a subordinate disagrees with you, do you help him to state his position as clearly and strongly as it can be made?

YES ☐ NO ☐

If "yes," you are working to understand him, and resolve the differences. In such cases, differences then provide the chance for progress, instead of an opening for a fight.

Do you encourage discussion groups where a subordinate feels free to state his beliefs, information, and attitudes?

☐ ☐

If "no," you are missing a chance to train him through the group interpersonal process. His educational process, like everyone's, depends completely on the way his own experiences and fixations cause him to interpret what you want him to do. Widen the framework of his experiences by exposing them to the group's variety of attitudes, and you widen his understanding, thus increasing your chances to change his behavior.

As you listen to what a subordinate says, are you actively appreciative of his differences in background, experiences, and motives?

☐ ☐

Polite listening and appreciative listening are poles apart. With the former, the listener merely waits in silence for the other person to stop talking in order that he, himself, can start to speak and to establish his own status. This kind of listening does not cause purposefulness to emerge from discussion. Purposefulness emerges only when listening conveys appreciation of human differences, and a rapport that makes the establishment of status unnecessary.

Do you encourage, rather than squelch, the differences of each member of your team in opinion, background, attitude, and values?

☐ ☐

Group progress flourishes in face of significant differences. A group with one mind no more thinks than a man with one idea, Dr. Bish cautions. Minds that think alike, cannot think together.

ON MAKING DECISIONS

PART VII OF

The Practise of Management

PETER F. DRUCKER

Decision-making actually has five distinct phases:

-*Defining the problem*
-*Analyzing the problem*
-*Developing alternate solutions*
-*Deciding upon the best solution*
-*Converting the decision into effective action*

Each phase has several distinct steps.

WHATEVER a manager does, he does it through making decisions. Those decisions may be made as a matter of routine, with the manager sometimes quite unaware that he is making decisions. Or they may affect the future existence of the enterprise and require years of systematic analysis. But management is always a decision-making process.

The importance of decision-making in management is generally recognized. A good deal of the discussion, however, centers on "problem solving," on giving answers. And that is the wrong focus. For there are very few things as useless—if not as dangerous—as the right answer to the wrong question.

It is also not enough to find the right answer. Much more important and much more difficult is to make effective the course of action decided upon. Management is not concerned with knowledge for its own sake; it is concerned with performance. Nothing is as useless, therefore, as the right answer that disappears in the filing cabinet, or the right solution that is quietly sabotaged by the people who have to carry it out to make it effective. And one of the most important and most difficult jobs in the entire decision-making process is to make

sure that decisions reached in various parts of the business, and on various levels of management, are compatible with each other, also consonant with the goals of the whole business.

Practically no problem in life—whether in business or elsewhere—ever presents itself as a "case" on which decisions can be taken. And so the first job in decision-making is to find the real problem and to define it.

What appears at first sight to be the problem rarely are the really important or the really relevant things. They are at best symptoms. And very often the most visible symptoms are the least revealing ones. Management may see a clash of personalities; the real problem may well be poor organization structure. Management may see a problem of manufacturing costs and start a cost-reduction drive; the real problem may well be poor engineering design or poor sales-planning. Management may see an organization problem; the real problem may well be lack of clear objectives. And so on.

One can scarcely spend too much time on this phase of decision-making. The books and articles on leadership are full of advice on how to make fast, forceful, and incisive decisions. But there is no more foolish—and no more time-wasting—practise than to decide quickly what a problem really is.

The manager cannot rely on symptoms or on experience to define the problem. He must not base important decisions on "intuition." He needs a strict method. He must analyze the problem rather than diagnose it.

There is only one such method: the definition of the problem by finding the "critical factor." This is the element (or elements) in the situation that must be changed, moved, acted upon before anything else can be changed, moved, acted upon.

For example, I recall that a kitchenware manufacturer for ten years bent all management energies toward cutting production costs, to no true improvement in profitability. Proper analysis showed that the real problem was the product-mix sold. The sales force put all emphasis on the most obvious sales appeal, lower price. As a result, the company sold more and more of the

less profitable lines, where its competitors made the least effort. And, as fast as it reduced manufacturing costs, it cut its price. It gained greater sales-volume; but the gain was pure fat, rather than growth. In fact, the company became progressively more vulnerable to market fluctuation. Only by defining the problem as one of product-mix could it be solved at all. And only by asking, "What is the critical factor in this situation?," could the right definition of the problem take shape.

An additional step in the definition of the problem is to define the conditions for the solution of the problem.

First the objectives must be thought through: What should the solution accomplish? The objectives should always reflect the objectives of the business, should always be focused ultimately on business performance and business results. They should always balance and harmonize the immediate future and the long-range future. They should always take into account both the business as a whole and the activities needed to run it.

At the same time, the rules that the solution has to observe must be thought through. What are the principles, policies, and rules of conduct that have to be followed? It may be a rule of the company never to borrow more than half its capital needs. It may be a principle never to hire a man from the outside without first considering all inside managers carefully. It may be established policy that design changes must be submitted to manufacturing and marketing before being put into effect by the engineering department.

Spelling out the rules is necessary for two reasons. To begin with, the right decision in many cases will require changing accepted policies or practises. And unless the manager thinks through clearly what he wants to change and why, he will not normally come up with a clear decision. He will be in danger of wanting both to change established practise and to observe it. And that attempt always leads to confusion.

More important is the second reason: the "rules" I have mentioned actually constitute the value-system within which the decision has to be made. Then values may be moral; they may be cultural; they may be company goals or accepted principles of company structure. In their entirety they constitute an ethical system. Such a system does not decide what the course of action should be. It only decides what the course of action should not be. Management people often imagine that the Golden Rule is a rule of action. They are wrong; the Rule only decides what action should not be taken. Elimination of the unacceptable courses of action is, however, an essential prerequisite to decision. Without it there will simply be so many courses of action to choose from as to paralyze the capacity to act.

The next phase in decision-making is analyzing the problem. It has two steps: classifying the problem and finding the facts.

It is necessary to classify the problem to know who has to make the decision, who has to be consulted in making it, and who has to be informed. Without prior classification of the

problem, the effectiveness of the ultimate decision is seriously endangered. For classification alone can show who has to do what in order to convert the decision into effective action. Classification, too, brings out what facts are needed and in what areas. For classification shows what areas will be affected by the decision.

The principles of classification are: one, the futurity of the decision (the time space for which it commits the business to a course of action and the speed with which the decision can be reversed); two, the impact of the decision on other areas and functions; and, three, the number of qualitative considerations that enter into it. We need add here only that it is this classification—and this classification alone—that can insure

that a decision really contributes to the whole business, rather than solves an immediate or local problem at the expense of the whole. That is because the classification proposed here sorts out problems according to their correlation to business goals and business performance. It forces the manager who makes the decision to see his own problem from the point of view of the business.

"Get the facts" is the first commandment in most texts on decision-making. But it

cannot be done until the problem has first been defined and classified. Until then no one can know what "facts" are; there are only data. Definition and classification determine which data are relevant. They enable the manager to dismiss the merely interesting but irrelevant. They enable him to say what of the information is valid and what is misleading.

In getting the facts the manager has to ask first: "What information do I need?" He has to decide how relevant the data in his possession are, and how valid they are. He has to decide what additional information he needs and get it.

These are, however, not mechanical jobs. The information itself needs skilful and imaginative analysis. It should always be scrutinized for underlying patterns that might indicate the problem has been wrongly defined or wrongly classified. In other words "getting the facts" is part of the job only. Using the information as a means to test the validity of the whole approach to the problem is at least as important.

Take the case of the monthly trade magazine that found itself in financial difficulties. The problem was at first defined as one of advertising rates. But analysis of the facts and figures showed something no one at the magazine had ever suspected: whatever success the magazine had had was as a source of news for its subscribers. As a result of this analysis of readership figures, the whole problem was redefined: how can we become a news magazine? The solution, by becoming a weekly. It was the right solution, too.

Of course, a manager will never be able to get all the facts he should have. Most decisions have to be based on very incomplete knowledge; either because the information is not available or because it would cost far too much in time and money to

Continued on page 36

The Many Readers

who have been especially interested in this series of articles by Peter Drucker will be glad to know that the articles, somewhat amplified, will be published as a book this Fall by Harper and Brothers, New York.



Forerunners of some 1,000 visitors a week who now tour Niagara Falls hydroelectric plant of Niagara Mohawk Power Corporation, these engineers, financiers made first trip in 1897 to see what they had wrought.

OPEN HOUSE EVERY DAY:

These companies find it pays off

ALFRED G. LARKE
Employer Relations Editor

DAY IN and day out, the year around, many American industrial concerns are paying from 30 cents to more than \$6 a head for the privilege of escorting members of the American public through their plants.

Some companies are unable to assign specific costs to the activity, but those who have been queried by *DUN'S REVIEW AND MODERN INDUSTRY*—sponsors of the least expensive and of the costliest programs, those who don't know their costs and those who prefer not to tell—all are enthusiastic about the value of the practise.

The year-around plant tour is much older than the once-a-year open house or occasional Busi-

ness-Industry-Education Day that has grown in favor during and since World War II.

One of the old-timers, still operating seven days a week, is the guided tour of the Niagara Mohawk Power Corporation, one of whose predecessor companies began in 1897 making its Adams Station a twin attraction with the Niagara Falls themselves.

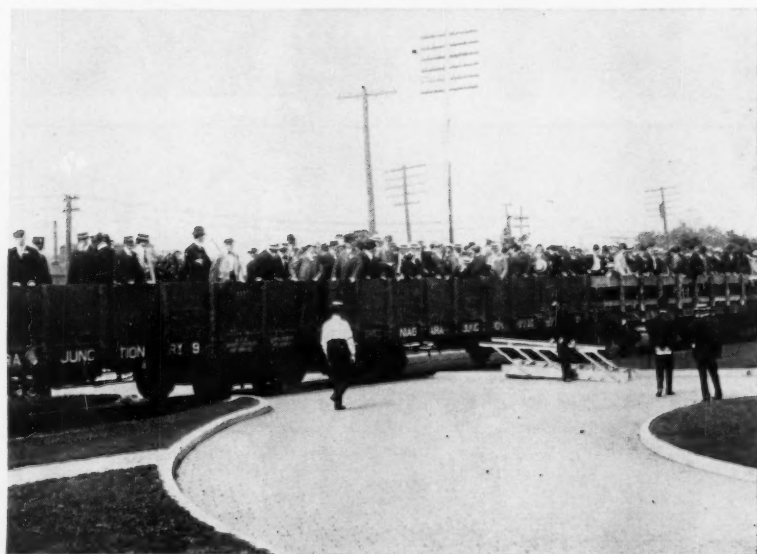
Fifty years ago, the power-plant tour did a powerful job of selling the simple idea of the use of electricity. To-day the tour concludes in a room in which is displayed a model of the proposed Niagara redevelopment project. Guests are told how five New York State private power

companies plan, if they are given the opportunity, to build a \$400 million plant downstream from the Falls. Literature is distributed explaining the five-company position for private and against public development.

Fifty-two thousand people visited the plant, saw power produced, heard the company story, in a recent 22-month period.

Access to an everchanging multitude of prospective visitors has been used to another advantage, for almost as long, by the Shredded Wheat

*Text continues on page 32
Photographs on page 30*



Tourists, honeymooners found own way to Falls plant, but special parties like conventioning engineers got this special transportation in 1903.



To-day visitors to 600-acre plant and grounds of Lederle Laboratories Division, American Cyanamid, Pearl River, N. Y., shuttle in a tractor train.

People don't just walk in—they must be asked



Invitations to visit the Peoria, Ill., distillery of Hiram Walker & Sons, Inc., are placed in local hotel rooms (left), on main-road billboards (below), in promotional booklets, occasionally in national advertising; direct contact is made with convention groups; the sales staff, employees, the Association of Commerce convention committee, ask others. Some other companies also use school sources.

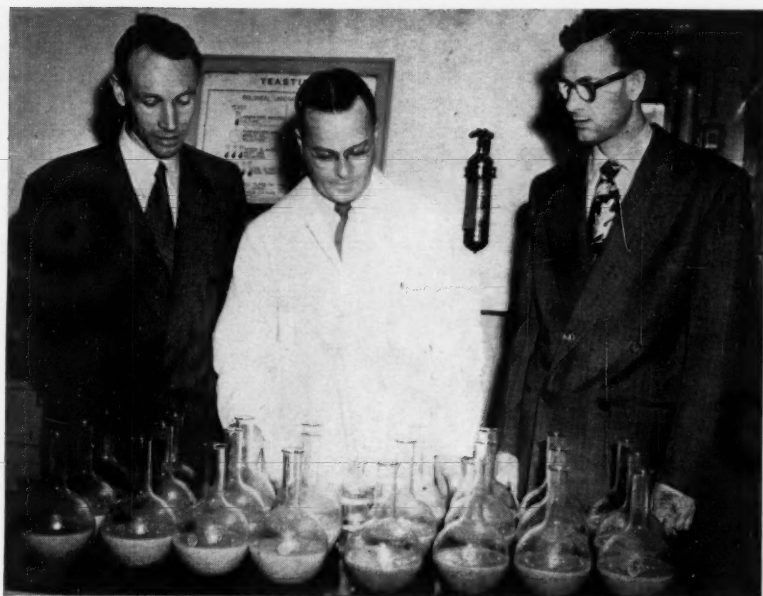


Choose guides to match the visitors



Some plants use only regular employees as guides, like the control laboratory chemist (left, above) briefing an agricultural group before a Hiram Walker distillery tour, or executive (left) welcoming Air Force men. Others, like Lederle Laboratories, have a full-time guide staff (above); too-tough questions are referred to supervisors, technicians. One large automobile manufacturing concern makes tour-guiding part of sales training for young college graduates. Miller Brewing Company, Milwaukee, Wis., has full-time chief guide, sales-trainee assistants; college students evenings. Niagara Mohawk Power Corporation supplements full-timers with school teachers week-ends, college students in Summer.

Tours can be tailored to the tourists



Hiram Walker chemist's explanation (above) of yeast cultures may delight technical men, but might bore to death a Niagara Falls tourist or casual

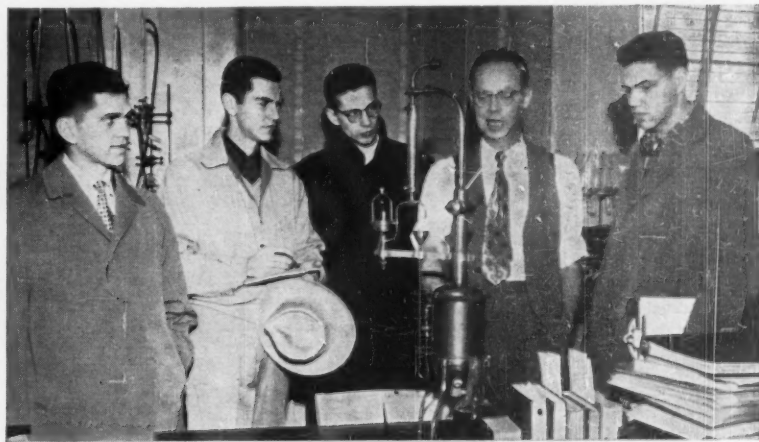


visitor on the "cat walk" (above) at Simonds Saw & Steel Company, Fitchburg, Mass. Most plants expand standard tour for special-interest guests.

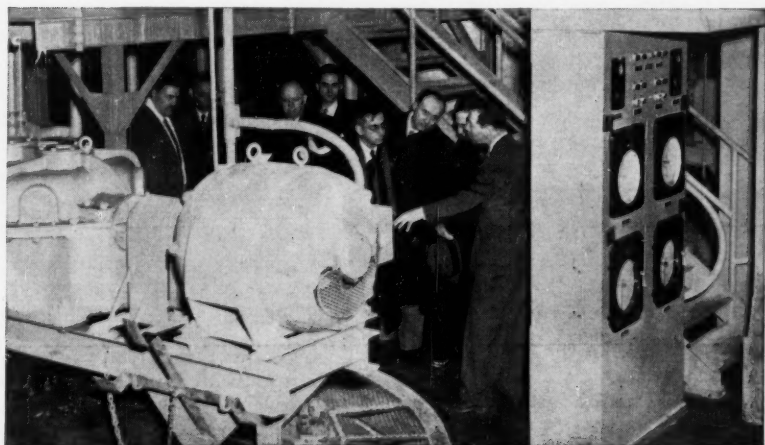
Plant trips serve many purposes



Scout troops, school classes learn cost and cleanliness of milk production in Supplee-Wills-Jones Milk Company tour, Philadelphia. So do parents.



Not the product but, more likely, future employment is in minds of college students (above) studying miniature gin still at Hiram Walker distillery.



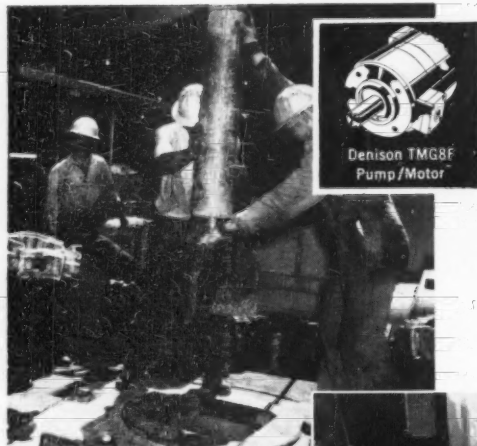
Lederle Laboratories gains interest, good will of important product-users as these Toronto, Ont., physicians inspect aureomycin fermentation tank.



At a milk plant, milk; at a brewery, beer; but at Hiram Walker, visiting Peoria business men finish trip with a choice: either hard or soft drinks.

DENISON HYDRAULIC EQUIPMENT

- Helps chew rock—a mile down
- Links 5 parts with one squeeze
- Puts new twist in ready mix



HELPS CHEW ROCK and cuts costs. In drilling oil wells, shocks from hitting bedrock damaged bits, caused power-drive failures. But, with Denison hydraulic motors now powering the rotary tables, these shocks are cushioned. Drills last longer, costs are reduced.



LINKS PARTS faster. One smooth, hydraulic stroke stakes five parts together... produces 750 door-latch assemblies an hour. Denison Multipress versatility, precision and speed enable manufacturer to produce more units in less time.



NEW TWIST for more payload. Here, lightweight, powerful Denison Pump/Motors replace bulky drive-equipment... save 1500 pounds of deadweight on mix concrete trucks... give better control of mixing drum.

WHAT'S YOUR PROBLEM? Is it engineering? Production? Costs? Then it is worth your while to call in a Denison engineer for consultation... without cost or obligation to you. Denison hydraulic presses and components are solving such problems in every industry in America. Write to: **THE DENISON ENGINEERING COMPANY, 1211 Dublin Rd., Columbus 16, Ohio.**

DENISON
Hydraulic

plant at Niagara Falls, now a part of the National Biscuit Company. The company opened its doors to visitors daily in 1904, after some genius of the day had virtually built the plant around the idea of sanitary food processing.

Many-windowed, probably one of the country's first air-conditioned factories, equipped with showers for employees and staffed for the most part with women operatives in crisply laundered uniform clothing, it sold Shredded Wheat, and later Triscuits, to the consuming public by selling cleanliness.

The original bakery was closed this year and operations moved to a newer plant, but the company hopes to resume tours at the new location. Although for 50 years no Falls honeymoon had been complete without a Shredded Wheat tour, the number of visitors was still mounting last year—40,000 in 1953 against 30,000 in 1950.

Cost of all this consumer promotion, which built community good will and created a steady supply of good employees, has been about \$12,000 a year—\$500 a month in the off season, about \$2,000 a month in heavy tourist months.

The small plant in a small town off the beaten path would no doubt find the year-around, open-house idea less fruitful, and for it the occasional open house for employees, community leaders, school children, may be the way to get the most out of plant visits. Not all the companies that encourage everyday visits, however, have any natural advantages of location or interesting processes.

It is a question how many of the public would visit a saw manufactory or a milk-bottling plant if the trip were not proposed to them by someone, made attractive, and encouraged by the management.

Yet Simonds Saw & Steel Company in Fitchburg, Mass., is open

to visitors every weekday, although tours are made by appointment. Use of engineers, members of the Service Department, and lineheads as guides is permissible because of the lesser number of visitors, and it fits well the varying incidence of visits. There is no such need to keep a guide or staff of guides as in plants where hundreds make the tour daily. Interest is aroused by word-of-mouth reports of those who have been through, and company salesmen invite customers.

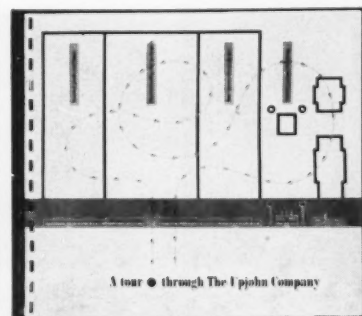
About 10,000 people a year go through the Supplee-Wills-Jones Milk Company plant in Philadelphia, at a cost to the company of roughly \$8,000 annually. Most are from the marketing area, although there are tours for special groups and for individuals from other parts of the nation and from abroad.

A plant tour director at this company organizes solicitation, carries on development of the program, and acts as guide, assisted when necessary by a reserve of people who, like him, have had six-weeks' training for the duty. He makes direct solicitation of medical and nursing schools, civic and educational groups. Driver-salesmen solicit visitations, and a brochure on the tour is distributed by the company's home economist through a consumer-service program conducted for women's and medical groups. About 70 per cent of visitors are of school age.

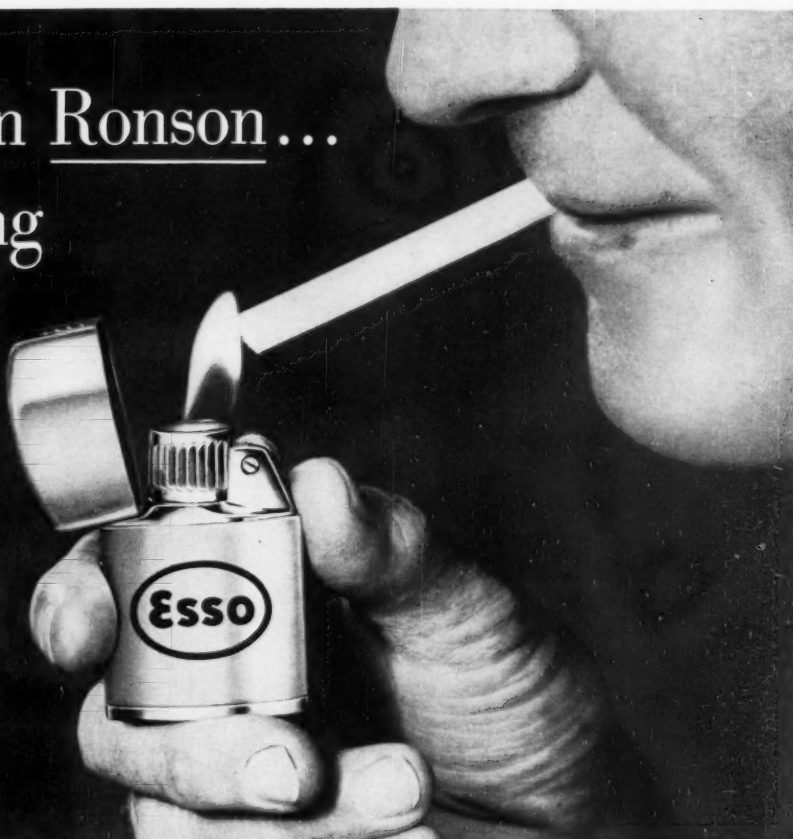
The milk company's stated purpose for the program is double: to demonstrate that the product is produced under the most sanitary conditions, and to explain company economics and acquaint the public with its background, operations, and profit picture. Supplee-Wills-Jones finds a \$25,000 price tag on a bottle-washing machine is an eye-opener, for instance, to women accustomed to thinking of a bottle

Some give "carry-homes"

The guide's talk, price tags on big machinery, post-tour question periods are relied upon to get over the company story in many year-around, open-house programs. In others, visitors are given an elaborate souvenir booklet on their trip, like The Upjohn Company's (Kalamazoo, Mich.) at left. Product samples, picture postcards, technical literature, recipes are other means.



News from Ronson...
 announcing
 the most
 exciting
 business
 gifts
 in years!



NEW 'WINDLITE' BY RONSON just out and already America's most talked about windproof lighter. New owners proudly show off the Windlite—and with it, your company's name, trademark, or brief advertising message. Retail value...\$3.95

*First time ever...complete Ronson line of
 prestige business gifts...widest price range*

You'll put your company's name in the best light, when you put it on a Ronson lighter. Many times a week...thousands of times a year...your name, trademark or slogan will be displayed. And every time, Ronson quality and prestige will proclaim your good taste and your insistence on the best. No other lighter...no other name in gifts...has won such public recognition and regard.

Now for the first time you can choose appropriate business gifts, service awards, safety awards, premiums, from a wide range of Ronsons with retail values from \$3.95 to \$200.

Certainly you'll want to see the Ronson line...hear about the liberal price structure...learn about the finest engraving and long-lasting color reproduction. Mail coupon and we'll be happy to give you the facts.



world's greatest lighter



world's greatest business gift

Ronson Corporation
 Industrial Division
 31 Fulton St., Newark 2, New Jersey
*I would like complete information on Ronson
 lighters for business gifts.*

DR-1

name _____
 company _____
 street address _____
 city & state _____

Only STEEL can do so many jobs so well



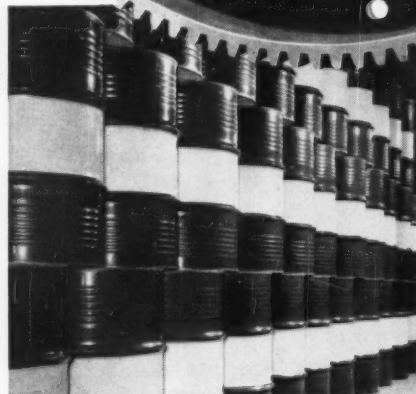
Here's A Lucky Lady. She not only owns a fine collection of pots, pans, cutlery and kitchen tools made out of beautiful, corrosion-defying stainless steel, but she also has the good fortune to be able to do kitchen chores at an easy-to-keep-shining, sanitary sink of USS Stainless Steel!



Steel Travels In The Best Circles. Maybe you'll never find yourself in desperate need of a big circle gear like this, but if you do, United States Steel can fabricate one for you, neatly, skillfully and using the best steel for the job. For United States Steel custom-fabricates to your requirements almost anything made of steel . . . from church steeples to bridges, from dam gates to grain bins. And erects them, too.



Hurricane Damage? No, this demolition job is being done on purpose . . . to make way for some new, modern buildings in a large eastern city. But whether buildings are going up, or being torn down, most of the "burden" is carried by the wire rope with which the big cranes, hoists and diggers are strung. It has to be strong, tough, reliable . . . and it is, when it's USS Tiger Brand Wire Rope.



Drums That Are Hard To Beat. Strong, leak-proof steel drums, made by United States Steel, are unsurpassed as containers for shipping almost anything anywhere. You'll find them traveling all over the world, bearing gasoline, paint, chemicals, foods, scores of other commodities. Only steel can do so many jobs so well.



This trade-mark is your guide to quality steel

SEE THE UNITED STATES STEEL HOUR. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

UNITED STATES STEEL

For further information on any product mentioned in this advertisement, write United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

AMERICAN BRIDGE . . AMERICAN STEEL & WIRE and CYCLONE FENCE . . COLUMBIA-GENEVA STEEL . . CONSOLIDATED WESTERN STEEL . . GERRARD STEEL STRAPPING . . NATIONAL TUBE
OIL WELL SUPPLY . . TENNESSEE COAL & IRON . . UNITED STATES STEEL PRODUCTS . . UNITED STATES STEEL SUPPLY . . Divisions of UNITED STATES STEEL CORPORATION, PITTSBURGH
UNITED STATES STEEL HOMES, INC. • UNION SUPPLY COMPANY • UNITED STATES STEEL EXPORT COMPANY • UNIVERSAL ATLAS CEMENT COMPANY 4-1445

washer as a 15-cent dishrag or bottle brush.

Hiram Walker & Sons, Inc., which has been welcoming visitors since its Peoria distillery opened 20 years ago last month, now entertains about 12,000 visitors a year, at a cost of about \$1 a visitor.

This company conducts one of the most vigorous programs to acquaint people with the fact of the tours (see pictures, page 30). Guests are met at the main gate by plant guards, registered at a reception desk, escorted to the auditorium, and given company literature to peruse until the tours start—at 10 A.M. and 2 P.M., daily.

Chemists, departmental employees and plant protection people conduct the tours, depending upon the nature and interests of the group. The trip takes about 1½ hours and ends in the "hospitality room," where guests are invited to have a highball, cocktail, or soft drink. While they relax, the guide answers any remaining questions.

Twenty years of question-and-answer periods have shown visitors are continually surprised by the number and complexity of the operations that go into distilling beverages, by the size and cleanliness of the plant, and by the huge amount the distilleries pay the government in taxes—all of them impressions to bring joy to an executive's or a stockholder's heart.

More people like to drink beer than like to see it made, but the Miller Brewing Company, Milwaukee, Wis., is an example of a company that strives to equalize the interest. It receives its 40,000 visitors each year in its Museum-Caves.

Miller talks up its open house in local and national advertising, gets about half home folks, half outsiders, a surprising percentage interested in a technical way. The standard tour lasts 45 minutes, ends in a hospitality center with Miller High Life. Guests are also given a souvenir glass and a 30-page booklet on the product and its virtues.

Stockholders are invited by letter to visit the plant of The Upjohn Company in Kalamazoo, Mich., and employees, their families, their friends, future employees, community leaders, are also welcomed. But the chief target is the professions—doctors, pharmacists, nurses, dentists, veterinarians, and students.

Last year the plant entertained 8,234 guests, of whom 1,058 were professional men and women, 3,086 were from schools, 472 were employees, and 3,618 were "laity." The budget for the activity was \$55,000, excluding salaries—Upjohn has one full-time chief guide and a full-time assistant and uses girls from technical, clerical, and production departments as his aides, training them with a detailed *Guide Manual* and two or three trips with the chief. The high budget includes hotel and meal expenses for some out-of-town professional groups.

One novel feature of the Upjohn program: Photographs are taken of all professional groups, and a print is sent each member. A tour booklet is given each visitor, and complimentary packages of products to professional visitors.

Similar is the program of the Lederle Laboratories Division, American Cyanamid Corporation, which, however, uses a staff of seven full-time young women guides, all of selected personality, with experience in handling people, two years at least of college education, and preferably knowledge of a second language. Trained for two weeks by an outside expert, they also can call upon supervisory or professional personnel for aid in answering questions of professional guests.

Lederle, situated in an obscure corner of southern New York, had 10,000 visitors in 1953, 8,000 the first six months this year, expects the 1954 total to be in excess of 15,000. Eighty per cent are from out of state, 500 of them from foreign countries. "Cost is plenty," a representative says, "but Lederle is satisfied good tours are excellent for both public and customer relations."

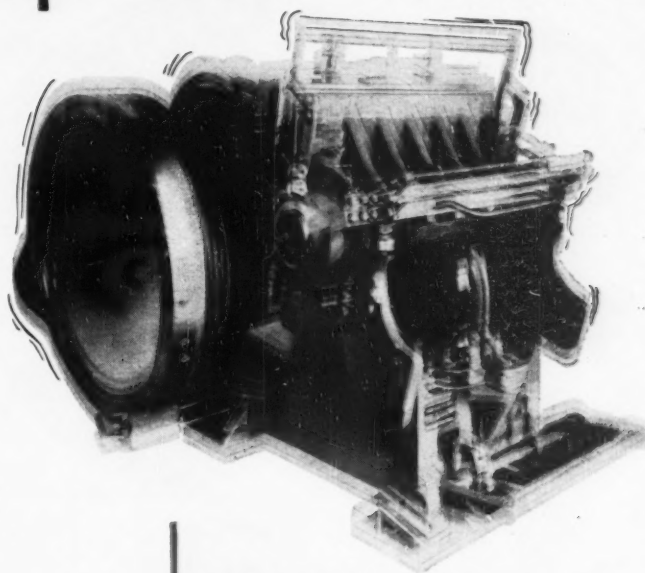
No company queried found any disturbance of production resulted from tours. "Absolutely no problem of disturbance," Lederle reports. "On the contrary, management believes tours help improve employee morale. Employees like to see what the customer looks like."

This jibes with a report from an automobile company which several years ago noted a rise in productivity on days when groups of visitors went through the plant.

What more can a company ask?

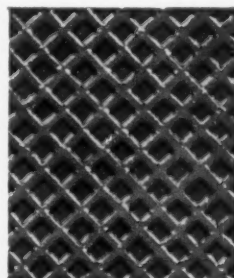
THE END

Stop Machine VIBRATION

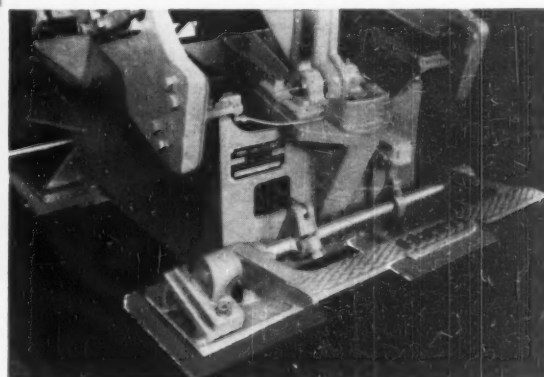


without

**BOLTING MACHINE
CEMENTING PAD
PRE-CLEANING FLOOR**



Air-Loc 4-17-4 is easily cut to fit contours of any machine base. Typical applications include: punch presses, textile looms, printing presses, home washing machines.



Now, with a new type of machine pad made with BAKELITE Vinyl Resins, one simple operation reduces "walking" without resort to fastening. Just slip this pad under the machine base—and the job's done! No bolts . . . no fasteners of any kind needed to secure the equipment to the floor! Neither machine nor pad will move because of the tremendous friction provided by the specially designed pad.

The manufacturer reports machine installation costs can be cut by as much as 50%! Down-time becomes negligible in equipment relocation.

This revolutionary pad is made of layers of granulated cork and sisal fiber—impregnated with BAKELITE Vinyl Resins. Outer surfaces have a cross-grid embossing that provides a sure grip on machine and floor alike. The pad is tough and durable. It will support pressures up to 4000 psi. It resists water, oil, most chemicals, alkalis and acids.

The same BAKELITE Vinyl Resins impart toughness and resiliency to a similar product—railroad tie pads made of abaca and sisal fiber. These pads greatly extend the service life of cross ties and rail joints by absorbing the punishing pressures and shocks of rail traffic. Write Bakelite Company, Dept. SX-15, for more information on uses and applications for BAKELITE Resins.

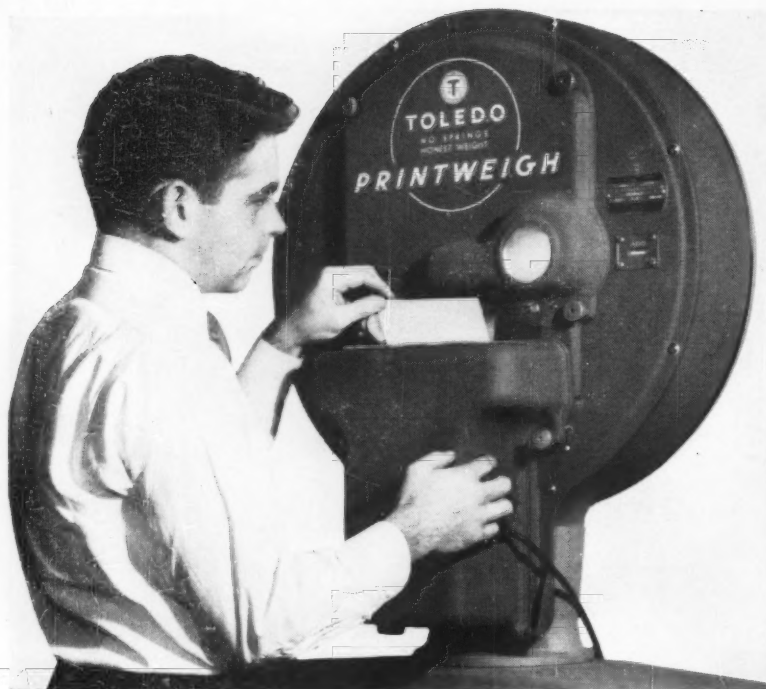
More data on the machine pads available from: Clark, Cutler, McDermott Co., Franklin, Mass.

BAKELITE
TRADE-MARK
VINYL RESINS
TRADE MARK
BAKELITE COMPANY

A Division of
Union Carbide and Carbon
Corporation



30 E. 42nd Street, New York 17, N.Y.



Control Today's Costs **PRINT** the Weight!

New Toledo Printweigh Scales meet your needs today for *closer cost control!* Stop human errors in reading, remembering, recording . . . provide accurately printed weights with split-second speed . . . accurately recorded!

Printweighs are available for dial type scales in the great new line of Industrial Toledos! 44 new features include . . . new clean-line design . . . double-pendulum mechanism in one-piece sector . . . lifetime fulcrum. Send for new condensed catalog No. 2001. Toledo Scale Co., Toledo 1, Ohio.

**READY TO SERVE YOU
IN MORE THAN 200 CITIES**

For practical assistance in the selection of new equipment—for efficient installation—or for dependable, factory-trained service, look to your local Toledo office as headquarters. Phone there for emergency repairs on all makes of scales. Ask about the economy and assurance of Toledo service agreements for regular, periodic inspection—"the ounce of prevention" that guards essential equipment.

TOLEDO®
HEADQUARTERS FOR SCALES

DECISIONS

Continued from page 28

get it. But to make a sound decision it is necessary to know what information is missing.

This shows how much of a gamble the decision involves. It shows the degree of precision and rigidity the proposed course of action can afford to have. There is nothing more treacherous or, alas, more common than the attempt to make very precise decisions on the basis of very coarse and incomplete information.

Finally, the missing information also indicates what has to be watched for in the execution of the decision as signs that the decision needs revision or modification. When information is unobtainable, guesses have to be made. Reminds me of the old saying of doctors: "The best diagnostician is not the man who makes the largest number of correct diagnoses, but the man who can spot early and correct right away his own mistaken diagnosis." To do this, however, the manager must know where lack of information forced him to guess.

It should be an invariable rule that for every problem several alternative solutions are being developed.

One reason for this is the danger of falling into the trap of the false *either-or*. Most people would protest were one to say to them: "All things in the world are either green or red." But most of us every day accept statements—and act on them—that are no whit less preposterous. Nothing is more common than the confusion between a true contradiction (green or non-green, for instance) which embraces all possibilities, and a mere contrast (green and red) which lists only two out of numerous possibilities. The danger is heightened by the common human tendency to think in extremes.

A good example is that of the small plumbing equipment manufacturer whose plant had become obsolete and threatened the company with the total loss of market position. Management concluded, rightly, that it had to move out of the plant. But because it did not force itself to develop alternate solutions, it decided that it had to build a new plant. And this decision bankrupted the company. Actually,

SAVE TIME • STEPS • MATERIALS with the **HANSEN** **TACKER**

• **FASTER** } Tacking
• **BETTER** }
• **AT** }
• **LESS** } **COST**

QUICK OPENING
SAVES TIME
IMPROVES SERVICE

REG. U.S. PAT. OFF.

HANSEN **ENGINEERED FOR SERVICE**

SAVES . . .

TIME—Fast, automatic, trip-hammer action. Drives staples fast as you grip. Take-up Jaw makes on-the-job servicing easier, quicker.

STEPS—Self-contained, ready for instant, continual use. Saves back-tracking. Light weight, easily portable. Vest-Kit for quick refills.

MATERIALS—Balanced design. Accurate, precision driving. Improved use of materials. Less waste. Powerful action drives each staple securely.

HANSEN VEST-KIT STAPLES

HANSEN VEST-KIT staples are quick to get at—easy to use. Narrow, slender box fits readily in vest pocket. Packed in convenient strips for instant use.

As near as the Vest Pocket



A. L. HANSEN MFG. CO.

5034 Ravenswood Ave., CHICAGO 40, ILL.

HOW TO SELL WITH 3-D PICTURES

get this **FREE** booklet

and sample **3-D pictures**



Learn how View-Master 3-Dimension color pictures can multiply your sales . . . as they have for hundreds of firms. Learn how you can now use the easy-to-operate View-Master Personal Stereo Camera to make your own 3-D color sales pictures. They're dramatic, profit-making and cost less than ordinary snapshots. Send for your free booklet today—it's a sure way to greater profits!

© Sawyer's Inc.
Portland, Oregon

**NO
OBLIGATION**

SAWYER'S Inc., Dept. BD, PORTLAND 7, OREGON
PLEASE send your free booklet "112 Ways to Use 3-D Pictures for Profit" and sample 3-D picture Reel to:

Company Name _____
Address _____
City _____ Zone _____ State _____
Attention of _____
Position _____

Always within easy reach . .

**Hyatt's
New
Line of
Dual-Purpose,
Self-Aligning
BARREL
BEARINGS!**



Got a bearing problem? Just reach for Hyatt's new Barrel Bearing Catalog! This is one catalog engineers have been waiting for, because it's essentially a *guide to lower maintenance costs!* Barrel Bearings are not only dual-purpose in design; they're also *self-aligning*. They operate with full efficiency under misalignment conditions which cause excessive wear in ordinary bearings. If your job involves bearing specifications, make sure you have Hyatt Catalog No. B-154. It puts a complete line of Barrel Bearings right at your finger tips. Write to Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.



MARKEM**SOLVED THIS MARKING PROBLEM****PRINTING
LABEL INFORMATION
ON CARTRIDGE
ENCLOSED FUSES**

Working closely with Underwriters' Laboratories, Inc. and with leading fuse manufacturers, Markem has developed a method which makes possible for the first time the printing of label information directly on cartridge enclosed fuses at production rates. Markem's direct ink imprints cannot "fall off" and are unaffected by moisture or ordinary chemical atmospheres. Paper label inventory and wastage problems are eliminated. Print is larger and color coding and identification are simplified. Fuse manufacturers anticipate better labeling at higher production rates and with lower costs. The Markem Method — Markem Machine, Markem type and ink and the special recording die roll for use when UL Manifest is required — as well as the imprint itself meet with UL approval.

MARKEM**MARKS THEM ALL****CAN MARKEM
HELP YOU?**

Printing labels directly on cartridge enclosed fuses is but an example of how Markem solves industry's marking problems. Markem has been providing industry with production techniques and equipment to identify, decorate or designate its products, parts and packages since 1911. Markem also provides technically trained men who are available in your area to assure continued satisfaction with Markem methods and equipment.

When you have a marking problem, tell us about it and send a sample of the item to be marked. Perhaps a complete Markem method has already been developed to solve your problem. If not, Markem will work out a practical solution.

Markem Machine Company, Keene 16, N. H., U.S.A.

MARKEM
 ...TO MAKE YOUR MARK

nothing followed from the finding that the old plant had become obsolete but the decision to stop using it. There were plenty of alternate courses of action: to subcontract production, for instance; or to become a distributor for another manufacturer not yet represented in the territory. Either course would have been preferable, and would have been welcomed by a management that clearly saw the dangers involved in building a new plant. Yet, management did not so much as think of these alternates before it was too late.

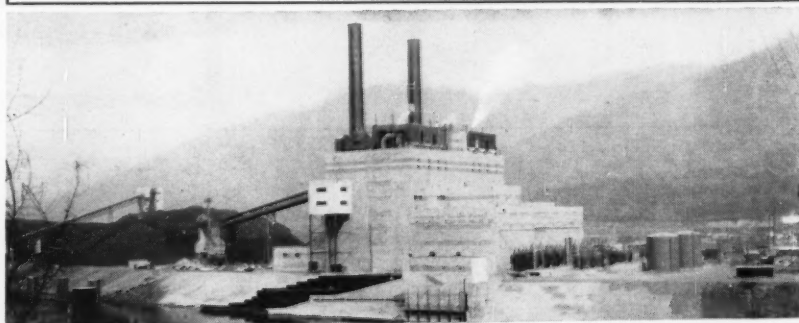
Think!

This case is one of many that brings out clearly how limited most of us are in our imagination. We tend to see one pattern and to consider it the "right," if not the "only," pattern. Because the company has always manufactured its own goods, it must keep on manufacturing. Because profit has always been considered the margin between sales price and manufacturing costs, the "only" way to raise profitability is "obviously" cutting production costs. We do

not even think of subcontracting the manufacturing job or of changing the product-mix.

Alternate solutions are the only means to bring our basic assumptions up to the conscious level, of forcing ourselves to examine them, of testing their validity. Alternate solutions are no guarantee of wisdom or of the right decision. But at least they prevent our making what we would have known to be the wrong decision had we but thought the problem through.

Alternate solutions are in effect our only tool to mobilize and to train the imagination. They are the heart of what is meant by the "scientific method." It is the characteristic of the really first-class scientist that he always considers alternate explanations, no matter how familiar and commonplace the observed phenomena. Of course, searching for and considering alternates does not provide a man with imagination he does not have. But most of us have infinitely more imagination than we ever use. A blind man, to be sure, cannot learn to see. But it is amazing how much he can learn to see through sys-

**WEST VIRGINIA'S ELECTRIC POWER CAPACITY
INCREASED BY 850,000 KILOWATTS
NEW PROGRESS IN A PROGRESSIVE STATE**
**POWER for INDUSTRY**

West Virginia's electric utilities are flexing some mighty potent muscles today — electric generating capacity has been increased 850,000 kilowatts in the past two years — and more to come.

Straddling the world's richest Bituminous Coal fields, West Virginia is on top of a limitless power fuel supply — 132,000,000 tons of high grade Bituminous Coal mined last year.

Water — look anywhere in West Virginia — every section boasts tremendous water supplies sufficient for industrial and power needs for decades to come. Four River giants, Ohio, Kanawha, Monongahela and Potomac, with a combined flow in West Virginia of 725,000 gallons per second.

This means constantly adequate power for West Virginia industry, and a power potential that begs for such super plants as Appalachian Power's 600,000 kilowatt plant at Graham Station or their

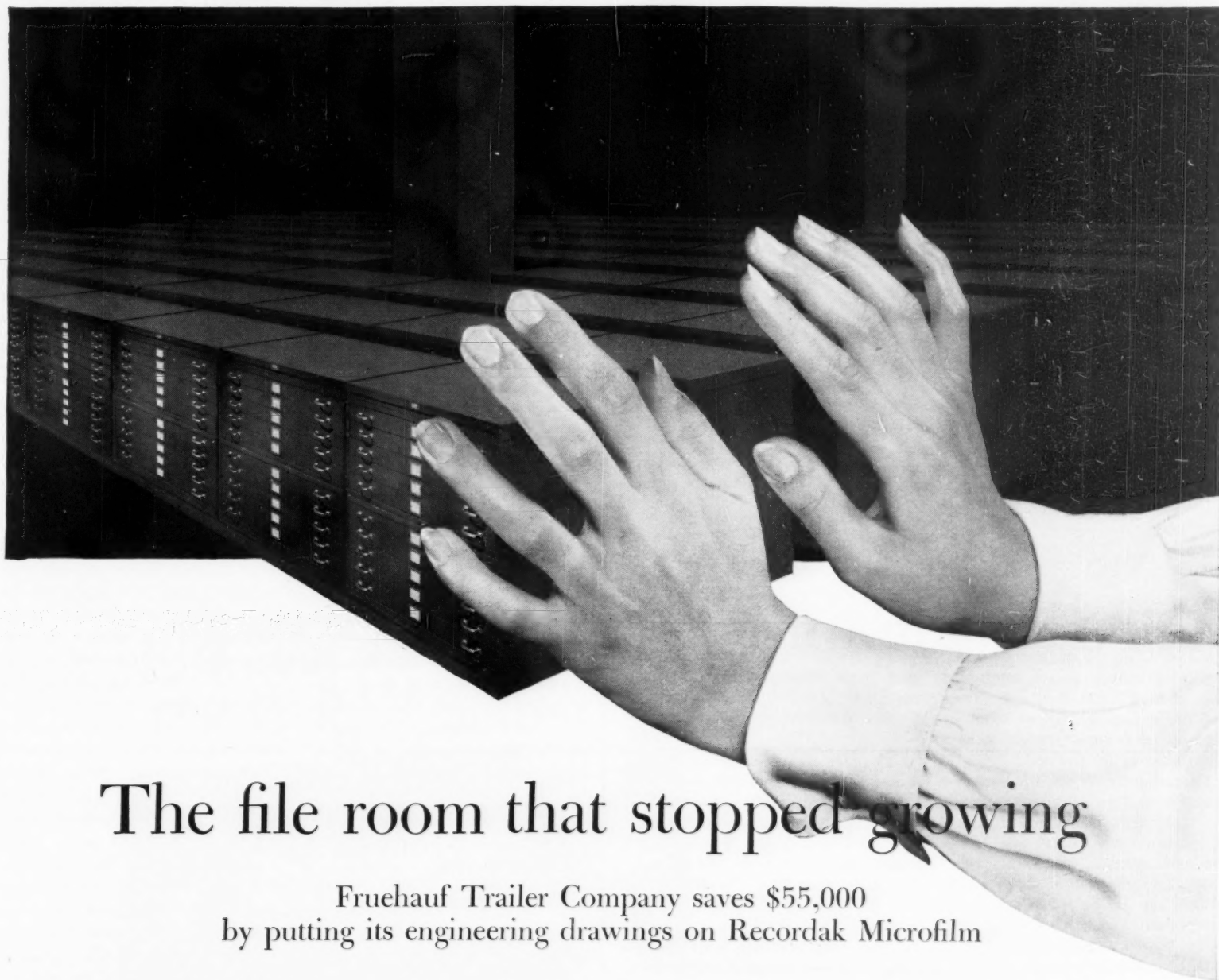
400,000 kilowatt plant at Glasgow, or Monongahela Power's 135,000 kilowatt plant at Albright.

West Virginia's electric power industry today operates with a 15 per cent reserve power pool over peak demands, and delivers a main plate generation equipment rating of 2,348,000 kilowatts.

Abundant power is but one of West Virginia's many assets. Here an industry not only has power at its source, it also has the advantage of climate, location, versatile working force, varied raw materials and strategic nearness to markets.

Industries whose plans include expansion or dispersion, should inquire about the State of Progress — West Virginia. Write or phone: Executive Director, West Virginia Industrial and Publicity Commission, State Capitol Building Room DR, Charleston, West Virginia.

WEST VIRGINIA INDUSTRIAL & PUBLICITY COMMISSION



The file room that stopped growing

Fruehauf Trailer Company saves \$55,000
by putting its engineering drawings on Recordak Microfilm

In 1946 Fruehauf began microfilming its older engineering drawings. Not one dollar has been spent since for filing cabinets or room expansion.

Only the drawings for the seven latest model years are kept in the files. One small cabinet holds Recordak Microfilm copies of all the rest—dating back to 1919—and *there's room to spare*. Estimated savings to date are \$55,000.

Just another example, this, of the way Recordak Microfilming is cutting costs for more than 100 different types of business...thousands of concerns.

See how Recordak Microfilming can help you:

- ☐ If you are now transcribing information from one record to another
- ☐ If you are now posting to ledger and customer statement
- ☐ If you are now describing individual items on your bills
- ☐ If you are now listing checks prior to deposit in your bank

- ☐ If you are now making punched card reports in duplicate or using multiple carbon forms in sales booklets, etc.

- ☐ If you are now making photo copies of records

These are only some of the possibilities. You should double-check your routines with a Recordak Systems Man soon. *No obligation whatsoever*—just write Recordak Corporation (Subsidiary of Eastman Kodak Company), 444 Madison Avenue, New York 22, New York.

"Recordak" is a trade-mark



RECORDAK

(Subsidiary of Eastman Kodak Company)

**originator of modern microfilming—
and its application to business systems**



Mail & female...first!

Sticking stamps always seemed to me to be a girl's job. And with all the small orders and samples we send out by parcel post, there certainly were a lot of stamps to lick and stick!

The stamp drawer was a nuisance—I always forgot to lock the darn thing.

Mr. Oddhem, the manager, wanted a postage report every night, and I am a bum bookkeeper.

So after I was here awhile, I sold Mr. Oddhem on getting a postage meter. Showed him it saved time on parcel post, and cut down our postage inventory.

He went for the postage protection in a meter, too; and the fact that it keeps its own records. I was glad to get rid of sticking stamps.

WELL, last Monday about four-thirty, a new doll breezes in and starts to mail letters with my postage meter.

"That's our Shipping Department meter, sister," I tell her.

"Mail and female first, Handsome," she comes back.

So every afternoon she puts the letters through the meter before I stamp the

parcel post. Smart gal! Looks like the postage meter might be the beginning of a beautiful friendship, or something!

PERHAPS you didn't know that the same postage meter provides postage for both parcel post and office letters—prints the exact postage required for parcel post on special tape, prints the meter stamp directly on the envelope and seals the flap at the same time! The double-duty postage meter saves time, work, and postage in any firm.

The meter protects your postage, keeps a record of postage used, assures you of having the right postage always on hand.

And metered mail needs no cancelling, can get away faster in the postoffice.

Call the nearest PB office and ask for a demonstration. Or send coupon for free illustrated booklet!

NOW, even the smallest office can get rid of adhesive stamps and lick-and-stick mailing... with the DM (desk model) Postage Meter.

FREE: Handy chart of Postal Rates with parcel post map and zone finder.



PITNEY-BOWES
Postage
Meter

Offices in 93 cities
in the U. S. and Canada

PITNEY-BOWES, INC.

1572 PACIFIC ST., STAMFORD, CONN.

Please send free ☐ booklet, ☐ rate chart to:

Name _____

Address _____

YOUR
AD
HERE



tematic training of the vision. Similarly, the mind's vision can be trained, disciplined, and developed. And the method for this is the systematic search for, and development of, all possible alternate solutions to a problem.

What the alternatives should be will vary with the problem. One alternative solution should always be considered: no action at all.

To take no action is a decision fully as much as to take action. Yet few people realize this. They believe that they can avoid an unpleasant decision by not doing anything. The only way to prevent them from deceiving themselves this way is to spell out what consequences the decision for no action actually carries.

Shock Treatment

Action in the enterprise is also always of the nature of a surgical interference with the living organism. It always means that people have to change their habits, their ways of doing things, their relationship to each other, their objectives, or their tools. And, even if the change is slight, there is always some danger of shock. A healthy organism will, of course, withstand such shock more easily than a diseased one. And, to be sure, "healthy" with respect to the organization of an enterprise means the ability to accept change easily and without trauma. Still, it is the mark of a good surgeon that he does not cut unless necessary.

Lastly, the belief that action on a problem has to be taken may in itself be pure superstition.

For 20 years a large shipping company had difficulty filling one of its top jobs. It never had anyone really qualified for the position, and whoever got it found himself in trouble and conflict very soon. But for 20 years the job was filled whenever it became vacant. In the twenty-first year a new president asked: "And what would happen if we did not fill it?" Nothing would happen. It turned out that the work the position had been created to perform had long since become unnecessary. Everybody had just assumed that the position had to be filled.

It is particularly important in all organization problems that one consider the alternative of doing nothing. For it is here that tradi-

tional ways of doing things, and traditional positions reflecting past rather than present needs, have their strongest hold on management's vision and imagination. There also is the problem of the almost automatic growth of "layers" and "levels" of management that will be perpetuated, unless the decision not to fill a vacant job is always considered as part of the decision how to fill it.

Only now should the manager consider which solution is the best solution. There are four criteria for picking the best.

If the manager has done an adequate job, he will either have several alternates to choose from, each of which would solve the problem, or he will have half-a-dozen or so solutions that fall equally short of perfection, but differ among themselves as to the area of shortcoming. It is the exceedingly rare situation in which there is one solution, and one alone, that will really do. In fact, wherever analysis of the problem leads to this comforting conclusion, one may reasonably suspect the solution as being nothing but plausible argument for a preconceived idea, and the manager of skimping on his "homework." Otherwise, the four criteria apply.

First, the manager has to weigh the risks of each course of action against the expected gains. There is no riskless action. But what matters most is neither the expected gain nor the anticipated risk, but the ratio between them. Every alternate solution should therefore contain an appraisal of the odds.

The second criterion is that of economy of effort. Which of the possible lines of action will give the greatest results with the least effort, will obtain the needed change with the least disturbance of the organization? Far too many managers pick an elephant gun to chase sparrows. Far too many others use slingshots against tanks.

The third criterion is that of timing. If the situation has great urgency, a preferable course of action dramatizes the decision and serves notice on the organization that something important is happening. If long, consistent effort is needed, a slow start that gathers momentum may be preferable. In some situations, the solution must be final and must immediately lift the vision of the organization to a

THE SUN TIMES **EXTRA**
**BURROUGHS AGAIN
 TOPS THE FIELD!**

NEWS DAILY — **EXTRA**
**SENSIMATIC '50'
 MAKES HISTORY!**

.... DAILY NEWS **EXTRA**
**LOW COST ACCOUNTING
 FOR EVERY BUSINESS!**



Burroughs Sensimatic "50"
 a full-size accounting machine
 at a new low cost

The sensational new Burroughs Sensimatic thrifty "50" accounting machine at its amazingly low price is big news in the field . . . real headline news for businesses large and small.

The Sensimatic "50" is an outstanding addition to the Burroughs Sensimatic family . . . a *full-size fully automatic* accounting machine.

Never before has such a machine been offered at a comparable price. And you save every day on ledger and statement form costs with the Sensimatic "50." Extra savings are yours, too, because it's so easy to operate that beginners quickly become expert. See it! Try it! Call your nearest Burroughs branch or write Burroughs Corporation, Detroit 32, Mich.

WHEREVER THERE'S BUSINESS THERE'S

Burroughs 

Challenge

TRADE MARK ®

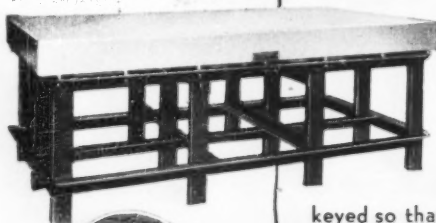
THE STANDARD FOR ACCURACY!

IN A COMPLETE LINE OF PRECISION EQUIPMENT



Industrially proved in automotive, aviation and other metal working plants, Challenge Precision Equipment has demonstrated its ability to withstand severe wear and still retain accuracy. Shown below are a few results of Challenge precision craftsmanship. The complete line is described in the new Challenge catalog available on request.

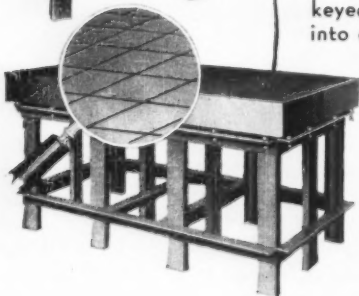
LAYOUT SURFACE PLATES



Made of special analysis semi-steel, Challenge Layout Surface Plates are precision ground or planer finished. Standard sizes range from 12 x 18 inches to 54 x 144 inches. Plates can be grooved and

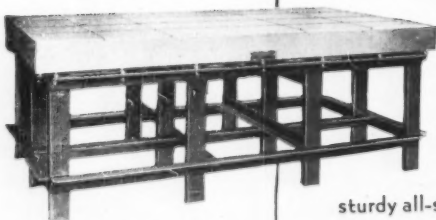
keyed so that two or more can be assembled into one huge unit of unlimited size.

LAPPING PLATES



Assures a perfect fit when lapping metal-to-metal joints on which no sealer of any kind is used. Ideal for preventing oil leaks in crank cases, cylinder heads, end bells, gear housings, ect. Plates have 1/16 inch grooves, 1/2 inch apart, running the full length and width of the surface.

WELDING TABLES



Provides a smooth, accurate, semi-steel surface with "Tee-Slots" for assembly, locating and welding. Available in 3 standard sizes: 30x60 in., 48 x 96 in. and 54x144 in. - other sizes to order. Table includes sturdy all-steel stand with leveling screws.

WORK BENCHES Durable cast-iron top two inches thick. Leveling screws insure a perfectly level surface. Three styles . . . Four sizes (top dimension) 28x48 and 28x60 with four legs; 28 x 72 and 28x84 with six legs.



THE CHALLENGE MACHINERY COMPANY
Office, Factories and Show Room:
GRAND HAVEN, MICH.

768

Challenge

new goal. In others, what matters most is to get the first step taken; the final goal can be left shrouded in obscurity for the time being.

These time elements elude analysis and depend on perception. But there is one rule. Wherever managers must change their vision to accomplish something new, it is best to be ambitious, to present to them the big view, the completed program, the ultimate aim. Wherever they have to change their habits, it may be best to take one step at a time, to start slowly and modestly, to do no more at first than is absolutely necessary.

Finally, in deciding between alternatives the manager must consider the limitations of his resources. And the most important resource, with the most important limitations, are the human beings that have to carry out the decision.

No decision can be better than the people who have to carry it out. Their vision, competence, skill, and knowledge determine what they can do and what they cannot do. A course of action may well require more of them than they possess today and yet be the only right course of action. Then efforts must be made—and provided for in the decision—to raise the ability and standard of the people. Or new people may have to be found some place who have what it takes. This may sound obvious to the point of being trite. But managements every day make decisions, develop procedures, or enact policies without even asking the question: "Do we have the means of carrying out these things, and do we have the people who can carry them out?"

The wrong decision, it should be emphasized, must never be adopted because people and their competence are lacking to do what is right. Nor is it "solving a problem" to find a solution that works on paper, but fails in practice because the human resources to carry it out are not available.

It is of the essence of a manager's decision that other people must apply it to make it effective. A great deal of time is being spent to-day on "selling" this, that, and the other solution. It is wasted time. To attempt to "sell" a solution is both too little and too much. It implies that all is well if only people "buy" a solution. A manager's decision is always a decision on what other

50,000 FIRMS SPECIFY SPEED SWEEP



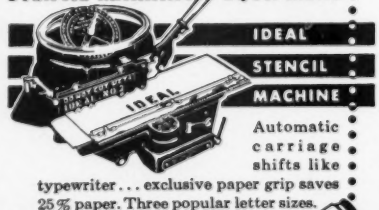
Sweeps faster, cleaner,
Outlasts Ordinary Brushes 3 to 1!

WRITE FOR STYLES, SIZES AND PRICES TODAY

Milwaukee Dustless Brush Co.
530 N. 22ND ST., MILWAUKEE 3, WIS.



with **IDEAL** STENCIL MARKING EQUIPMENT



HANDY A FOUNTAIN

STENCIL BRUSH

Natural grip fits hand, lessens fatigue. Push-button ink control... replaceable tip.

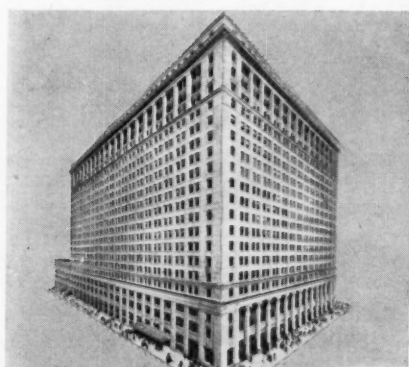
PLUS complete line of stencil inks and stencil board.

IDEAL STENCIL MACHINE CO.
109 Iowa Ave., Belleville, Ill.

Write for FREE "Shipping Guide."



A touch of independence that's welcomed



UNION COMMERCE BUILDING
Cleveland, Ohio

Operatorless elevating is another step in a progressive modernization program in the 21-story UNION COMMERCE BUILDING. The original signal control elevators were modernized in 1949 to Otis AUTOTRONIC supervision. Now, with the wide acceptance of the tenants, 19 elevators are being modernized to self-service.

UNION COMMERCE BUILDING is one of more than 175 new and modernized office buildings, hotels, hospitals, banks, and department stores that have given AUTOTRONIC elevating an overwhelming vote of confidence—by buying it!

Owned and Operated by Union Properties, Inc.

"How would my tenants react to operatorless elevators?"

This question is uppermost in the minds of building managers who are concerned with today's spiraling operational costs.

Why not ask your tenants?

Otis AUTOTRONIC elevators give tenants a sprightly feeling of independence. Riders simply step into the car and press buttons for the floors they want. Everything else is completely automatic.

We've found that tenants like the idea of self-service elevators. They push buttons for each other. They tell new riders what to do. Everybody's friendlier.

Tenants quickly accustom themselves to automatic door closing. The Otis Electronic Elevator Door inspires confidence with its "electronic politeness." A two-way communication system in the car keeps the riders from feeling alone. Employees feel more independent, especially when making frequent interfloor trips.

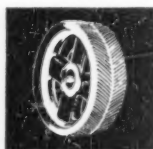
We'll be glad to help you explain Otis AUTOTRONIC elevating to your tenants. Call any of our 268 offices.

Otis Elevator Company, 260 11th Ave., New York 1, N. Y.



COMPLETELY AUTOMATIC
AUTOTRONIC®
ELEVATORING

Change Wet or Oily Floors to DRY FLOORS in seconds with **TORNADO® CLEANING**



How do you clean oil and water from the floors in your shop? If you're doing it any way other than with a Tornado vacuum, chances are you're wasting a lot of time.

The Cincinnati Gear Company saves plenty of time and labor with Tornado cleaning. One stroke of Tornado's 300 m.p.h. suction and "Whoosh", wet or oily floors are dry. Then, with their Tornado, they instantly clean metal chips and dirt from machinery and fixtures. (Incidentally, you don't have to do a bit of "conversion" to change Tornado from dry to wet pickup.)

What's more, they use the Tornado heavy duty neoprene hose that isn't affected by oil and stands up under the most severe abuse.

Find out how Tornado cleaning can improve and speed up your plant cleaning operations.

We'll be glad to send a Tornado Demonstration Team to your plant. Just tell us the time and place.



Write for Tornado Industrial Cleaning Bulletin #600.

BREUER ELECTRIC MFG. CO

5106 NORTH RAVENSWOOD AVENUE • CHICAGO 40, ILLINOIS



TAKES THE **DUST** OUT OF INDUSTRY

people should be doing. And for this it is not enough that the other people "buy" it. They must make it their own.

But to speak of "selling" also implies that what is the right decision be subordinated to what the "customer" wants. This is poisonous and dishonest doctrine. What is right is decided by the nature of the problem—and by nothing else. The wishes, desires, and receptivity of the "customers" are quite irrelevant. If it is the right decision, they must be led to accept it whether they like it or not.

If time has to be spent on "selling" a decision, it has not been made properly and is unlikely to become effective. "Presentation" of the final results should never be important. The only thing that should ever be considered in respect to "presentation" is that, in line with the oldest and most basic rule of rhetoric, a decision should always be presented to people in language they use and understand, rather than in language that makes it difficult for them to understand what the decision is all about.

However questionable the term

(and the concept behind it) the emphasis on "selling the decision" points up an already mentioned fact: It is of the nature of the managerial decision that it is made effective through the action of other people. The manager who "makes the decision" does actually no such thing. He defines the problem. He sets the objectives and spells out the rules. He classifies the decision and assembles the information. He finds the alternate solutions and picks the best. But for the solution to become a decision, action is needed. And that the decision-making manager cannot supply. He can only communicate to others what they ought to be doing, and motivate them to do it. And only as they take the right action, is the decision actually being made.

To convert a solution into action first requires that people understand what change in behavior is expected of them, and what change to expect in the behavior of others with whom they work. What they have to understand is the minimum necessary to make them able to act the new way. It is poor decision-making to present a decision as if

CONSULT *P.S.* FOR THE BEST



Item B-426
\$6720

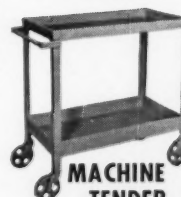
STOCK CHECKER'S TRUCK

Designed to handle a large variety of items or parts. Three steel shelves with 1" flanges all around. Floor clearance 9 1/2". Overall height to top shelf 42 1/2", top of table 50". 44" long, 20" wide. All steel welded construction. Semi-crated approx. 190 lbs.



UTILITIES RACK

on wheels
Item NS-415M \$6775 (Roller bearing, 6" x 2", all-metal wheels).
Item NS-415R \$7020 (Ball bearing, 8" x 1 1/2", rubber-tired wheels).



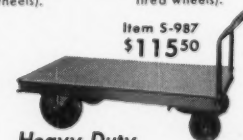
MACHINE TENDER

on wheels
Item NS-428R \$2610 (rubber-tired wh'ls)
Item NS-428M \$2410 (all-metal wh'ls)



HAND DUMP TRUCK

Reinforced heavy sheet steel, 1/2 cubic yard, capacity—two 8" semi-steel wheels and two 4" metal swivel casters. Wt. 125 lbs.



Heavy Duty WAREHOUSE TRUCK

Use anywhere heavy loads are moved and rubber tired wheels are desired. 54" long, 28" wide, 42" high at handle. Top of platform 14" off floor. Welded construction. Heavy 3/4" plate. Two swivel wheels at handle end. Approx. wt. 300 lbs.

WHEN ORDERING always give "item" number. All PRICES are f.o.b. Detroit. Prices are subject to change without notice. Write for catalog.

DESIGNED AND MANUFACTURED BY

Palmer Shile Co.

16034 Fullerton Ave. • Detroit 27, Mich.

it required people to learn all over again or to make themselves over into a new image. The principle of effective communication is to convey only the significant deviation or exception—and that in clear, precise, and unambiguous form. "Everything remains the same except" is the right order of slogan. Effective communication is, therefore, a problem in economy and precision.

But motivation is a problem in psychology, and so has entirely different rules. It requires that the decision become "our decision" to the people who have to convert it into action. This in turn means that the people who have to act have to participate responsibly in the decision.

They should not, to be sure, participate in the definition of the problem. In the first place, the manager does not know who should participate until he has both defined and classified the problem; only then does he know what impact the decision will have and on whom. Participation is not necessary, and usually not desirable, in the information-gathering phase. But the people who will have to carry out the decision should always

come in and participate in the work of developing alternates. Incidentally, this will also improve the quality of the final decisions. Points the manager would not have thought about may be brought out, hidden difficulties may be spotted, available but unused resources found.

Also, precisely because it affects the work of other people, the decision must help these people achieve their objectives, must help them in their work, must contribute to their performing better, more effectively, and with a greater sense of achievement. It cannot be a decision designed to help the manager perform better, do his job easier, or obtain greater satisfaction from it.

And permit me to add at this late, albeit strategic, point that nothing I have said so far about decision-making is new. On the contrary, I have only repeated what has been known for centuries, if not thousands of years. But while many managers use the decision-making method well, few understand clearly what they are doing or have thought it through.

The final article of this series, *The Manager of Tomorrow*, will appear next month.

Annual Car Leasing

Get the facts today
in the
"FOUR WHEELS PLAN"
booklet...

WRITE DEPT. DR-10

17 CONTINUOUS
YEARS OF LEASING
AUTOMOBILE
FLEETS TO
AMERICA'S
LEADING
INDUSTRIES

- COMPLETE PROGRAM
- New Cars
 - Maintenance
 - Repairs
 - Insurance
 - Licensing
 - Delivery Anywhere in U. S.

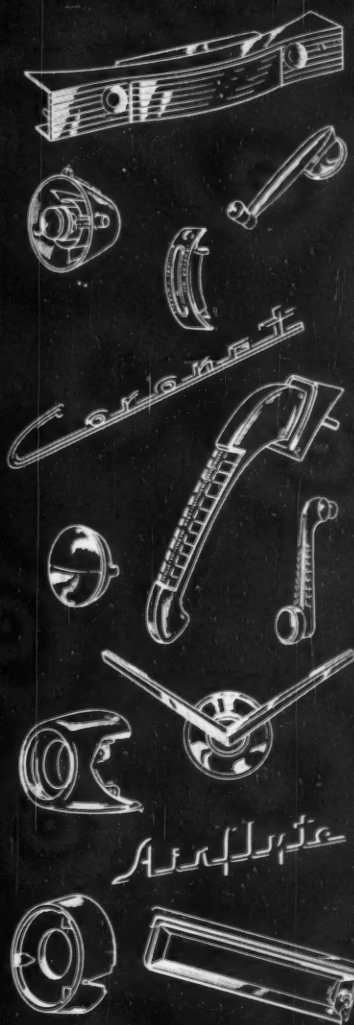


FOUR WHEELS, INC.

HOME OFFICE: 6200 NORTH WESTERN AVENUE, CHICAGO 45

THIS SEAL IS YOUR GUARANTEE

When Quality is a
Must in Finished
Die Castings



America's great industries demand *quality, quantity and fast delivery* of finished die castings. That's why more than a score of leading manufacturers in the refrigeration, automotive, radio-television, appliance and plumbing fields rely on Grand Rapids Brass Company.

Two Grand Rapids Brass Company plants now produce more than 17,000,000 plated, finished die castings each month.

If you require quality castings electroplated or baked synthetic lacquer finished delivered in large quantities *on schedule*, Grand Rapids Brass Company's design engineers and more than 1,000 skilled employees will prove of invaluable help.

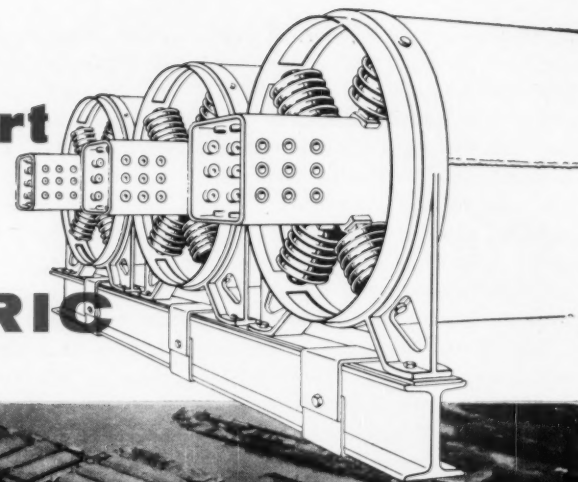
● Write for complete details on the production capabilities of one of the largest die casting-finishing plants in the nation.

Grand Rapids
Brass Company

Division of Crompton Manufacturing Company
Grand Rapids Michigan

Suppliers
to the Nation's Leading
Automotive, Refrigeration,
and Plumbing Manufacturers

Power gets a new start at PHILADELPHIA ELECTRIC



In modernizing vital Delaware Station —

the Philadelphia Electric Company selected Isolated Phase Bus to start power on its way from the giant generators to the "world's greatest industrial area."

More than 8700 single-phase feet of I-T-E Isolated Phase Bus was installed. Flexible prefabricated sections easily followed building contours, saving valuable erection time. Bus provides the maximum safety and reliability of service PE requires.

Power plants have long looked to I-T-E as a traditional source of basic equipment and engineering aid. I-T-E is proud of its place in Philadelphia Electric's "power for progress" plans.



I-T-E CIRCUIT BREAKER COMPANY

PHILADELPHIA 30, PA.

CIRCUIT BREAKERS • METAL-ENCLOSED SWITCHGEAR • POWER SWITCHING EQUIPMENT • MECHANICAL RECTIFIERS
ELECTRONIC COMPONENTS • SPECIALIZED METAL FABRICATIONS • METAL-ENCLOSED BUS

- Million new workers find jobs
- Another new peak in construction
- Inventories less burdensome
- Retail sales at new record
- But factory lay-offs continue

The Doldrums of Doubt

*Things are seldom what they seem;
Skim milk masquerades as cream...
Black sheep are in every fold,
All that glitters is not gold.*

—H. M. S. Pinafore

Several weeks ago business men were attempting to determine if the rises in many lines during Spring were signals of a valid recovery or merely seasonal flashes in the pan. While this problem has not been entirely resolved (although the optimistic explanation seems to be gaining favor) another somewhat similar perplexity has raised its troubling head. How is one to separate the descents into the usual Summer doldrums from a resumption of the decline which began a year ago? Until the final figures—finely tailored for seasonal variations—on the performance of the economy during the Summer come available sometime next month, business men shall most likely go confidently on their appointed rounds, blithely oblivious to whether or not they are performing seasonally.

Although it was immensely evident that general business in July had moved into the calm waters of the Summer doldrums, there seemed little likelihood, if any, that it would remain becalmed for fresh winds seemed to be gathering. Wage rises, easy money, more defense spending—while not compelling enough to inflate fully the sails of business—should at least insure a delighted departure from the doleful doldrums.

Among the aspects of the economy on which most business men would heartily agree—in addition to the acerbity of competition—was that the ground had been cleared for a new rise. Banqueting business men, convention keynoters, purchasing agents, business economists, and various unassorted onlookers were virtually unanimous this Summer in attributing more strength to business in the second half than in the first.

Job Hunters Made Happy

Although almost as many people were working during July as in the prior month, the total remained below the year-ago level. Reassuring as a pat on the back was the employment picture to many people during June. However, it was not as wholly roseate as some optimists concluded from a hasty reading of the jobless totals. Neither was it so dolorous as had been predicted earlier this year, when four million unemployed were anticipated for the Summer of 1954 by even the most sanguine seers.



CHICAGO LAKEFRONT—WILLIAMS PHOTOGRAPH

Most pleasantly surprising was the steadiness of unemployment in June which held at 3.3 million despite the entry of a million-and-a-half students into the job market. The rise of 42,000 in unemployment was the smallest increase since 1940. However, the test was not yet over: more students most likely began hunting jobs in July, a time when neither farming nor construction were expanding sufficiently to absorb all of the new workers. As during the prior months, June joblessness held at 5.1 per cent of the labor force which was the lowest level since last January.

In pre-war 1939 unemployment had averaged 17.2 per cent—that is, seventeen of every 100 people who were able and willing to work could not find jobs. Among the most heartening news was a drop of 200,000 in the ranks of the long-time jobless (out of work for fifteen weeks or more) who had totalled more than a million for the past three months. In early July new claims for unemployment insurance benefits rose 19 per cent as many workers ineligible for vacation pay filed their claims; however, continued claims remained close to the 1954 low.

The new workers in June were to a large extent absorbed by agriculture and construction. Although total employment rose one million to 62.1 million, the rise was both less than usual and concentrated primarily in farming. The unremitting decline in factory payrolls which had been going on since July 1953 was virtually halted in June 1954 when the dip amounted to only 6,000, as rises among producers of soft goods were offset by still-shrinking payrolls of durable-goods producers.

While the total number of people at work in June was down 1.1 million from a year ago, the decline in employment in non-agricultural establishments was even sharper: 1.8 million. This large-scale disappearance of jobs mirrored, of course, inventory-slashing, defense cutbacks, productivity gains, and the inevitable shifts characteristic of a dynamic economy. Most of the vanished jobs evaporated in manufacturing and particularly in durables; the attrition was most marked among producers of transportation equipment, machinery, primary metals, and textiles. Year-to-year gains in employment were scored by such lines as construction, service, finance, and local Government.

There were signs of a rise in factory jobs in

Weekly Business Signposts

SELECTED BUSINESS INDICATORS	LATEST WEEK*	PREVIOUS WEEK	YEAR AGO
Steel Ingot Production Ten Thousand Tons	154	156	209
Bituminous Coal Mined Hundred Thousand Tons	722	535	916
Automobile Production Thousand Cars and Trucks	119	123	161
Electric Power Output Ten Million K.W. Hours	910	895	846
Freight Carloadings Thousand Cars	695	570	721
Department Store Sales Index Number (1947-1949=100)	115	97	111
Wholesale Prices Index Number (1947-1949=100)	110	110	111
Bank Clearings Hundred Million Dollars	921	857	896
Money in Circulation Hundred Million Dollars	299	300	300
Business Failures Number of Failures	188	226	184

*Steel data are for the fourth week of July; all others are for the third week except coal, freight, sales, and money which are for the second.

Sources: Amer. Iron & Steel Inst.; U. S. Bureau of Mines; Automotive News; Edison Electric Inst.; Assoc. of Amer. Railroads; U. S. Bureau of Labor Statistics; DUN & BRADSTREET, INC.

Business thrives on credit, both getting and giving. Yet in giving credit, a business may as a result find itself in **need** of more ready funds. To handle larger credits or for any other sound reason could your business use more **cash?**

Through Commercial Credit's flexible method, hundreds of companies have obtained added cash—as little as **\$25,000 or** as much as millions. The total we advanced for working capital purposes alone last year amounted to more than 600

millions with several companies using over 5 Million each. In most cases cash was available within 3 to 5 days of first **contact** and

funds were available continuously without further negotiations. If you can use extra cash, get in touch with **Commercial** Credit.

You'll find our methods fast and flexible—and our one charge is tax deductible. Contact Commercial **Credit.** Write, wire or phone the nearest COMMERCIAL CREDIT CORPORATION office below and say, "Send me details of plan offered in *Dun's Review & Modern Industry*"

BALTIMORE 1—200 W. Baltimore St. CHICAGO 6—222 W. Adams St.
LOS ANGELES 14—722 S. Spring St. NEW YORK 17—100 E. 42nd St.
SAN FRANCISCO 6—112 Pine St.

A Service Available Through Subsidiaries of
COMMERCIAL CREDIT COMPANY
Capital and Surplus Over \$150,000,000

The Trend of BUSINESS

the months to come. The work-week lengthened again in June for the second straight month—a pattern which frequently presages adding to payrolls. At 39.6 hours the average factory work-week was quite close to the overtime-payment point which many manufacturers would like to avoid during a period of acute cost consciousness. The lengthening of the work-week in primary metals and furniture in June was the largest since the end of World War II. At \$71.68, the average factory worker's wage was only 68 cents below the all-time high reached last December.

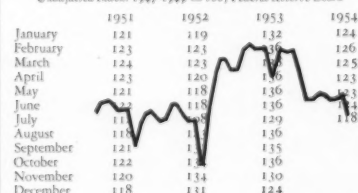
Although there was little change in the number of jobs in factories and mines in June, total industrial production edged upward slightly to 124 (1947-1949=100). The July decline was expected to be somewhat less than in recent years. Output continued to be down about 9 per cent from a year ago, with the largest declines generally paralleling the drops in employment. Steel production, which has been one of the most severely affected segments

of the economy during the recent readjustment, recovered in July from the vacation slowdown in the early part of the month. The recent rise in steel prices was widely expected to be absorbed by fabricators and other users. Machinery makers who saw their orders dwindle sharply during the past year looked hopefully to the changes in depreciation allowances in the new tax law to boost their backlogs.

Inventories which have been viewed variously as a sore spot or the area of healthy adjustment, continued to decline in June. As during the prior month, when inventories were below a year earlier for the first time in four years, total stocks held below the 1953 level. The decline during June was much smaller than during May when business men slashed their stocks on hand by over \$700 million. The most strenuous efforts at inventory trimming continued to be on the manufacturing level. Most buyers held their commitments to the needs of the near-future, although there was widespread belief that

Industrial Production

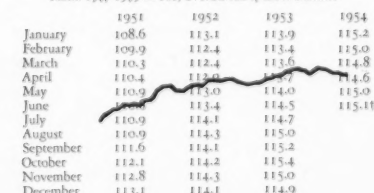
Unadjusted Index: 1947-1949 = 100; Federal Reserve Board



† Approximation; figure from quoted source not available.

Consumers' Price Index

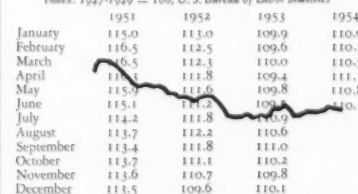
Index: 1947-1949 = 100; U. S. Bureau of Labor Statistics



† Approximation; figure from quoted source not available.

Wholesale Commodity Prices

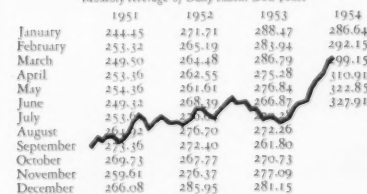
Index: 1947-1949 = 100; U. S. Bureau of Labor Statistics



† Approximation; figure from quoted source not available.

Industrial Stock Prices

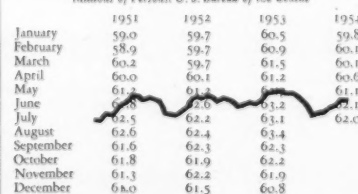
Monthly Average of Daily Index: Dow Jones



Based on closing prices of 30 industrial stocks.

Employment

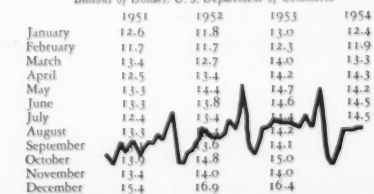
Millions of Persons: U. S. Bureau of the Census



Includes all civilian workers.

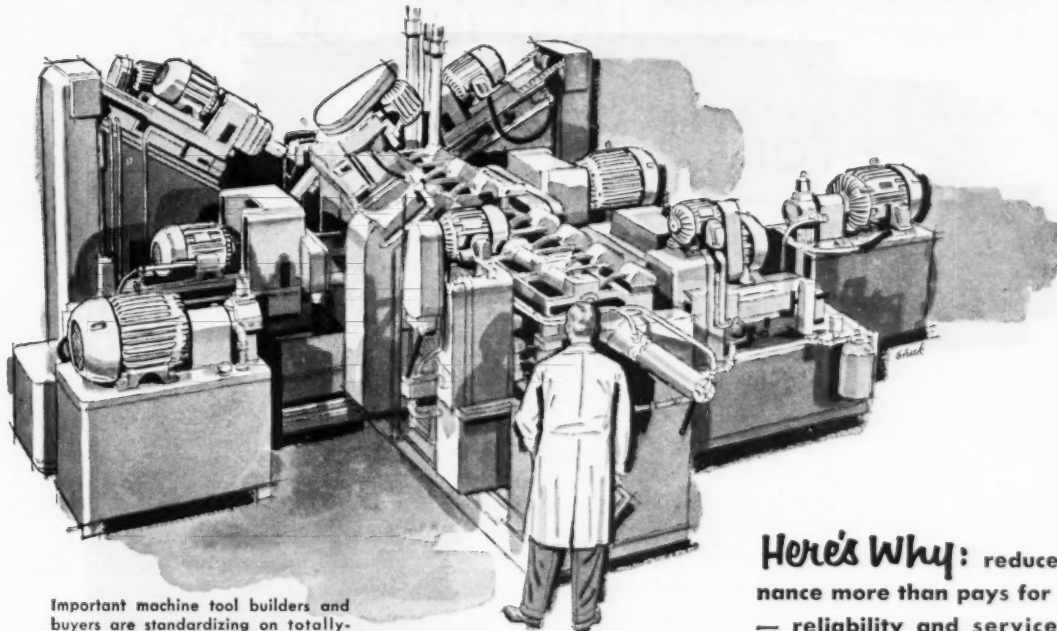
Retail Sales

Billions of Dollars: U. S. Department of Commerce



† Approximation; figure from quoted source not available.

Preference for *Totally enclosed* Motors Soars Since 1948!



Important machine tool builders and buyers are standardizing on totally-enclosed motors. This Transfer-matic built to JIC standards by The Cross Company for a large automotive supplier uses 22 Allis-Chalmers totally-enclosed motors.

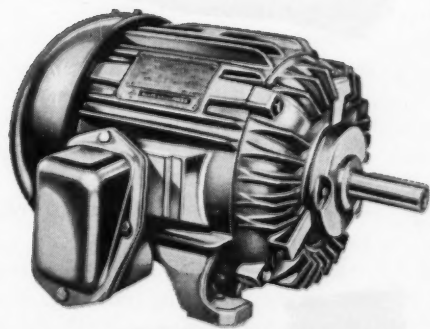
Here's Why: reduced maintenance more than pays for added cost — reliability and service continuity are extra benefits.

MORE and more industries of all kinds are standardizing on totally-enclosed motors. The ratio of these to open motors is steadily rising. Economy-minded managements find it pays to use these motors almost everywhere even though the initial price is higher than for open motors.

It's a Better Investment—Totally-enclosed motors are protected against most of the causes of expensive maintenance and premature failure. Experience proves that the low maintenance and dependability which result from this protection make the use of totally-enclosed motors a sound economic practice.

Allis-Chalmers Motors Pace the Trend—Eight years ago, Allis-Chalmers introduced its fin-type, totally-enclosed motor. The popularity of this construction is evidenced by new models very recently introduced by several other manufacturers.

For all the facts, contact your A-C office or distributor. Or, write Allis-Chalmers, Milwaukee 1, Wisconsin.



ALLIS-CHALMERS



C-5662

\$1,000,000 is looking for a business that needs "working money"

Is your business

one of the many that is suffering from growing pains...caught in the trap of constantly increasing sales without a comparable increase in "working money" to carry them?

We have helped many sound and successful companies over this hump with our working money plan of financing. Today, they are among our best clients.

IT is a familiar story to us. A business grows to the point where sales outstrip the financial ability to handle them. Money is tied up in materials, goods in process, new equipment. The payroll goes up and up. Swollen accounts receivable look fine on paper, but they are 30 to 60 days or more from helping today's pinch.

If you were in this spot, how would you handle it?

Textile Banking Company's working money program offers you solid help in a very simple way. It will enable you to defrost your frozen assets. Put back into circulation the money...your *own* money...now locked up in receivables and inventory. Turn your

idle money into working money by using Textile Banking Company's type of financing service.

LAST YEAR, we supplied more than \$300,000,000 of working money to successful, growing companies in various fields. Not only are they completely satisfied with our method of keeping them in a strong cash position...but also they value the helpful collateral services that are available to them if they wish.

If our type of financing service fits your operation, we can supply you with working money to an amount generally limited only by your sales volume. And, in using our service, your management retains full operating control...does not suffer interference from us.

A normal requisite for our service is a minimum annual sales volume of a half million dollars. But we can and do make exceptions for firms which have promising potentials for growth.

WE WILL be glad to confer with you on your financing problems. Or, write for details of our "Working Money" program...without any obligation, of course.



Textile Banking Company, Inc.

Financing Leading Firms in Many Fields of Industry
55 Madison Avenue • New York 10, N. Y.

The Trend of BUSINESS

most of the inventory paring had already been generally achieved.

Free Spenders

Reflecting the gains in employment and wages in June, total personal income held close to the \$285 billion reached in the prior month despite some slight loss in farm income from sliding prices. For the first half of 1954 there was scant variation in total personal income from the comparable 1953 level. During the same period consumer spending topped all previous records although retail trade was not quite up to 1953 in the early months of the year. However, the increased spending for housing, utilities, medical and other services, transportation—much of it involuntary due to increased prices—was not reflected at the retail level.

For the second month this year, retail stores sold slightly more in July than they did a year earlier. Although most shoppers were quite price-conscious (discount houses are growing rapidly), there was much less consumer hesitation than during the 1948-1949 slowdown. In fact, the recent decline in factory production was apparently prevented from feeding on itself and thus spiralling downward by the strong floor offered by consumer spending.

In June retail trade was virtually unchanged from the record level of a year before and 2 per cent above the prior month. In contrast to the pattern of purchasing in recent months, most retail lines showed little variation from a year ago. The most pronounced rise was that of 5 per cent at gasoline stations. Both apparel and household goods, which had registered year-to-year losses in

recent months, were close to the year-ago levels. The most spectacular news on the retail scene was made by automobile dealers who sold 8 per cent more new cars than in June 1953; this was the first year-to-year gain in auto sales scored in 1954. However, the rejoicing in dealer showrooms was not especially boisterous for profit margins have been deeply diminished from the pressure of severe price competition.

The most sinewy section of the economy, construction continued to boom in June and chalked up a new record volume of \$3.3 billion. The most pronounced gains over the prior month were in non-residential construction, particularly in highways and commercial structures. The gain of 3 per cent over the year-ago level was compounded of a variety of variations; school building was up 38 per cent while military installations were down 45 per cent. The gains in residential building were buttressed by VA mortgage insurance which underwrote a much larger proportion of new homes than a year ago.

Failures Up Slightly

Business failures, after a two-month decline, edged up 2 per cent in June to 965 and were 18 per cent above last year, exceeding any June since 1941.

Concerns failed at a rate of 43 per 10,000 listed enterprises, according to Dun's Failure Index which projects monthly mortality to an annual basis and adjusts for seasonal fluctuations. This casualty rate rose from 41 per 10,000 in the preceding month and 36 a year ago, but remained considerably below the pre-war toll of 60 per 10,000

BANK CLEARINGS (Thousands of Dollars)

	1954	1953	% Change
Total 24 Cities.	38,478,436	37,477,667	2.7
New York City	47,566,263	41,716,906	4.0
Total 25 Cities.	86,044,699	79,194,573	8.6

NEW BUSINESS INCORPORATIONS

Geographical Divisions:	June 1954	June 1953	June 1954	June 1953
New England.....	633	606	3,716	3,591
Middle Atlantic.....	3,148	2,856	18,937	17,291
East North Central.....	1,635	1,570	9,886	9,096
West North Central.....	481	461	2,912	2,729
South Atlantic.....	1,413	1,385	8,279	8,060
East South Central.....	275	271	1,645	1,554
West South Central.....	448	455	3,493	3,328
Mountain.....	508	381	2,603	2,161
Pacific Coast.....	1,207	941	6,419	6,031
United States.....	9,748	8,926	57,890	54,471

DAILY WHOLESALE PRICE INDEX

The index is prepared on the basis of daily spot closing prices of 30 primary commodities (1930-1932 = 100).

Week Ending	Mon.	Tues.	Wed.	Thurs.	Fri.
July 30..	272.39	271.99			
July 23..	273.05	272.93	271.62	271.98	272.05
July 16..	272.51	272.87	272.52	272.28	273.02
July 9..	272.11	273.64	272.78	272.89	
July 2..	271.46	271.13	270.72	272.13	272.35

WHOLESALE FOOD PRICE INDEX

The index is the sum total of the prices per pound of 31 foods in general use. It is not a cost-of-living index.

Latest Weeks	Year Ago	1954
July 20..	\$7.23	July 21.. \$6.75
July 13..	7.23	July 14.. 6.74
July 6..	7.22	July 7.. 6.62
June 29..	7.30	June 30.. 6.54
June 22..	7.28	June 23.. 6.57
		High May 25.. \$7.46
		Low Jan. 5.. 6.85
		1953
		Dec. 29.. \$6.81
		Feb. 3.. 6.13

Proud of your trademark?



**Zippos
will
carry it
everywhere**

A lot of hard work—a lot of future hopes—are wrapped up in your firm's trademark. It's the face your business shows the world. Why not have it still more widely known—in full, rich color on the gleaming surface of a Zippo?

Give Zippos as a business gift and you may be sure that your customers will use them. 20... 40... 60 times a day, your message will flash before

them, just as surely as the Zippo flashes into flame.

There's something about the ease of use and utter reliability of Zippo that makes it part of a smoker's personality. It's carried everywhere—and your message with it. It's actually guaranteed to work anywhere, even in wind or rain. That means utmost mileage for your message, at modest investment. Just mail coupon.



ZIPPO®

LIGHTS EASILY... ANYWHERE... ALWAYS

ZIPPO MANUFACTURING COMPANY, BRADFORD, PA.

In Canada: Zippo Manufacturing Co., Canada Ltd., Niagara Falls, Ont.

Zippo Manufacturing Co.
Dept. D-2, Bradford, Pa.

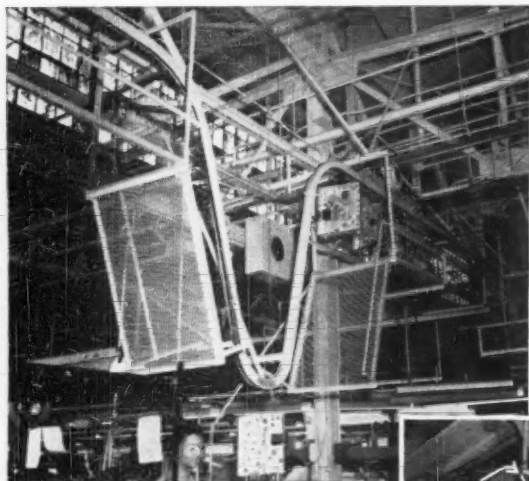
Please give me full information about business gift Zippos—prices in large or small quantities, time of delivery, opportunity to use color, and the help your design department will give us in making a beautiful and distinctive gift.

Name _____

Firm _____

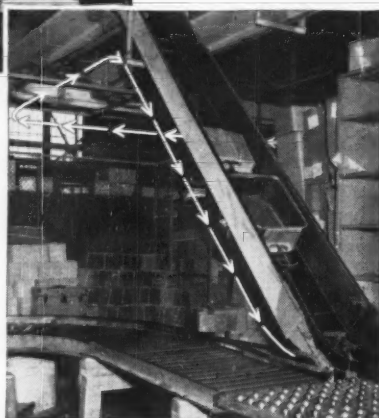
Address _____

...a T-V set is born



• "Bare Chassis" conveyor in RCA plant is over 1,000 feet long. Here ZIG-ZAG is used for both production-flow and moving storage of television receiver chassis.

• "Record Conveyor," 1,800 feet long, is inverted type. ZIG-ZAG operates upside down in 10-inch deep trough, pushing boxes of finished records to packing department and warehouse.



with the help of "Zig-Zag" Continuous Power Conveyors

The Radio Corporation of America's plant at Indianapolis, Indiana, turns out hundreds of television receivers every day. Even the slightest hitch in production-flow can seriously hamper vital deliveries to dealers.

To expedite handling, RCA installed several Richards-Wilcox ZIG-ZAG Continuous Power Conveyors to keep things moving smoothly, both on production lines and in transport between divisions. They help boost TV and phonograph record production by eliminating production bottlenecks.

RCA chose ZIG-ZAG for the same reasons so many other manufacturers have done so—because it's quality designed and manufactured for years of low-cost, trouble free service. Because of its flexibil-

ity, operating continuously "up, down, in, out and around" anywhere overhead, releasing valuable floor space and personnel for other jobs. And because when changing conditions make alterations necessary, ZIG-ZAG Conveyors can be relocated by plant personnel, usually without loss of a single part.

Whatever your problems in materials handling, R-W ZIG-ZAG Conveyors can help you solve them. With carrying pendants located on 6-inch centers, ZIG-ZAG is designed to handle any load a man can lift in continuous production. A choice of drive units permits travel at any required speed with variations of 10 to 1 or better. For complete details on R-W ZIG-ZAG Conveyors, write us or consult an R-W Engineer, at no obligation.



1880 1954

REG. U. S. PAT. OFF.
SLIDING DOOR HANGERS & TRACK • FIRE
DOORS & FIXTURES • GARAGE DOORS & EQUIP-
MENT • INDUSTRIAL CONVEYORS & CRANES
• SCHOOL WARDROBES & PARTITIONS •

Richards-Wilcox Mfg. Co.

MATERIALS HANDLING DIVISION
Branches in Principal Cities

475 THIRD STREET, AURORA, ILLINOIS

The Trend of BUSINESS

businesses recorded during 1939.

Liabilities rose more than the number of failures in June, mounting 8 per cent above May to \$41,613,000.

All of the upturn from May took place in manufacturing and construction. Only two notable changes occurred in manufacturing; casualties in the textile and apparel industry increased markedly whereas casualties in the paper and printing industry dropped sharply to the lowest level this year.

Among retail failures there was a decline in the food and general merchandise lines, while the toll in most other lines edged upward. Casualties in the automotive trade have remained relatively even for three consecutive months. Retailers of food and general merchandise had lower mortality than last year;

FAILURES BY DIVISIONS OF INDUSTRY

(Current liabilities in millions of dollars)	Number 6 Months 1954	Number 6 Months 1953	Liabilities 6 Months 1954	Liabilities 6 Months 1953
MINING, MANUFACTURING...	1,205	844	104.5	65.5
Mining—Coal, Oil, Miscellaneous...	32	21	6.3	0.9
Food and Kindred Products...	90	81	10.3	8.4
Textile Products, Apparel...	297	206	17.4	12.7
Lumber, Lumber Products...	176	119	8.8	6.2
Paper, Printing, Publishing...	67	60	6.4	8.7
Chemicals, Allied Products...	43	33	3.4	4.2
Leather, Leather Products...	56	50	3.2	4.0
Stone, Clay, Glass Products...	32	20	1.0	0.8
Iron, Steel, and Products...	61	25	7.2	3.9
Machinery...	150	69	27.3	7.9
Transportation Equipment...	30	21	3.6	1.9
Miscellaneous...	171	139	9.7	5.6
WHOLESALE TRADE...	551	447	26.9	23.8
Food and Farm Products...	144	128	6.5	6.3
Apparel...	21	18	0.5	0.5
Dry Goods...	37	17	1.8	0.9
Lumber, Building Materials...	52	40	2.8	4.2
Chemicals and Drugs...	24	17	0.6	0.7
Motor Vehicles, Equipment...	26	22	0.8	0.7
Miscellaneous...	247	205	13.9	10.5
RETAIL TRADE...	2,900	2,150	81.9	55.4
Food and Liquor...	512	443	7.3	7.0
General Merchandise...	96	77	4.4	1.8
Apparel and Accessories...	459	319	9.4	9.0
Furniture, Furnishings...	519	330	28.9	12.0
Lumber, Building Materials...	166	108	4.7	3.8
Automotive Group...	301	240	11.2	6.4
Eating, Drinking Places...	489	372	9.1	8.6
Drug Stores...	86	59	1.7	2.1
Miscellaneous...	272	202	5.3	4.7
CONSTRUCTION...	673	504	26.4	19.1
General Building Contractors...	233	186	12.3	8.5
Building Sub-contractors...	406	291	12.4	8.0
Other Contractors...	34	27	1.7	2.6
COMMERCIAL SERVICE...	449	339	17.6	10.5
TOTAL UNITED STATES	5,778	4,284	257.3	174.4

FREE Reg. Size compact of STAYMOIST the pleasant, sanitary, long lasting FINGER TIP MOISTENER!

Staymoist ends the thumb-in-mouth and other messy moistening methods. Touch crystal clear Staymoist in the handy compact and have a finger that stays moist far longer. A real time-saver for all paper handling operations. Send today to **ENTERPRISE DISTRIBUTING CO.**, KEITH BLDG., CINCINNATI 2, O.

Unsurpassed in Quality at Any Price
GENUINE 8" x 10"
GLOSSY PHOTOS IN 1 DAY!
5 1/2¢ EACH In 5,000 Lots
6¢ in 1,000 Lots
\$7.99 per 100
Postcards \$23 per 1,000
Mounted Enlargements (30x40) \$3.85
"Copy Negative 8"x10", \$1.25; postcards 75¢"
"Full color postcards 3M—\$99.50"
Under supervision of famous
James J. Kriegsmann
COPY-ART Plaza 7-0233
165 West 46th St.
New York 19, N. Y.
WE DELIVER WHAT WE ADVERTISE



"After testing all types ... we standardized on Magcoa Dockboards"

Says James McCabe, Chief Industrial Engineer, American Maize-Products Co., Roby, Indiana —"Before standardizing on Magcoa Dockboards," says Mr. McCabe, "we tried all types—both heavy-metal and another type of light-metal, 'home-made' and specially made.

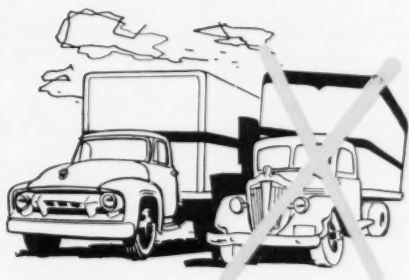
"Cost records for our 31 Magcoa Dockboards, used on both truck docks and rail docks," continues Mr. McCabe, "show a measurable savings of more than \$2500 a year in labor, truck and tire maintenance—plus an immeasurable employee relations benefit because our Magcoa Dockboards are safe and save strain. They actually paid for themselves in their first three years of service."

For your free copy of the new Dockboard FACTS FILE, clip this coupon to your business letterhead, print your name clearly... and mail to—
MAGNESIUM COMPANY OF AMERICA MATERIALS HANDLING DIV.
EAST CHICAGO 9, INDIANA

NOW! Get all the benefits of truck ownership... without capital investment!



1. Why tie up huge capital in the purchase of your trucks? Let Hertz buy them! Use your capital for other company needs.



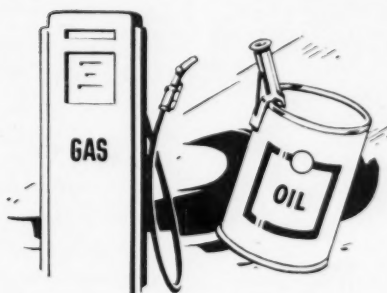
2. If you now have trucks Hertz will buy them at mutually agreed prices and lease them to you. If your trucks are too old, Hertz will furnish new Fords or other fine trucks.



3. Hertz maintains all trucks. We garage them, wash them, repair them, keep them always in top condition for daily dependable service.



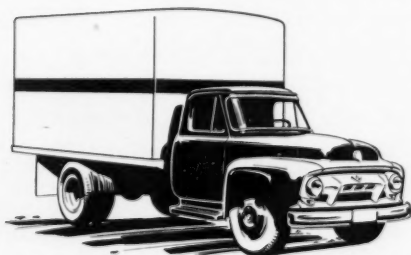
4. Trucks engineered to suit you. For your exact needs, Hertz engineers your trucks to proper specifications. Paints them as you wish to look as your own.



5. We supply gasoline, oil—all necessary accessories: tires, anti-freeze, etc.—everything but the driver.



6. Insurance furnished also for your protection. Policies drawn to your satisfaction, through your agent or broker, if you prefer.

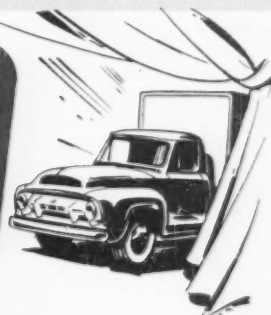


7. For rush periods or peak loads, Hertz can supply you with extra trucks whenever you need them... as long as you need them.



8. You save bookkeeping expense. Instead of many individual bills for hundreds of items... you get only one bill from Hertz.

LEASE YOUR TRUCKS
from **HERTZ**
NEW TRUCKS... EVERYTHING
FURNISHED BUT THE DRIVER



9. With Hertz Truck Lease Service your trucks are always in fine condition, clean, smart-looking... add prestige to your company.



Hertz Truck-Lease Service is most flexible. You may use all or any of the above benefits, according to your needs. If you prefer others which are not shown, Hertz will provide them too.

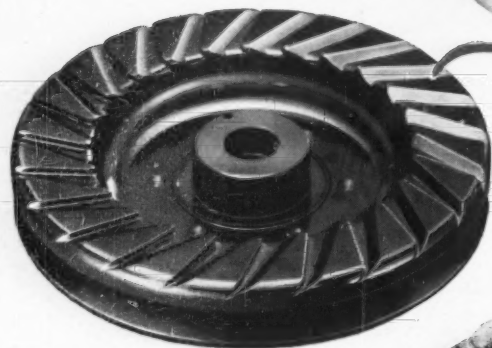
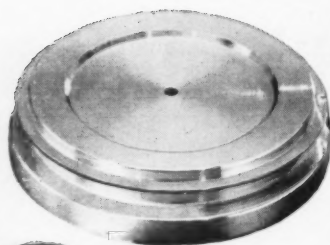
Hertz serves every type of business. Among Hertz customers are manufacturers, wholesalers, distributors, retailers... restaurants, laundries, cleaners, department stores, grocers, specialty shops, etc.

Hertz—the world's largest truck and passenger car rental organization—has a 30-year record of customer satisfaction. You will find it pays to lease or rent trucks from Hertz. For folder giving complete information call your local Hertz station or write or phone Hertz Truck-Rental System, Department H84, 218 South Wabash Avenue, Chicago 4, Illinois. Phone: WEBster 9-5165. No obligation, of course.

Look in your telephone directory under "H" for your nearest Hertz station.

HERTZ Truck-Rental SYSTEM

BEFORE: Cast Metal



AFTER: Molded Durez



Durez take-up drum on "Steno" Wire Recorder Dictation Machine made by Crescent Industries.

Could YOU reduce parts cost this way?

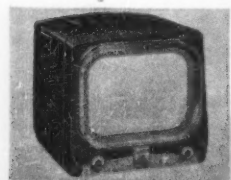
Phenolic plastics are more than ever a profitable line of approach to better products... and to fabricating economies. New materials developed by Durez are continually widening their usefulness in fields requiring electrical, heat, and impact resistance.

From our files, this example is one that might well be matched in your business — in what you make or propose to make. Seeking to overcome the cost of numerous pre-assembly operations on a precision-balanced turntable (plus a reject problem), this

manufacturer solved both problems by switching to a unit of molded Durez. The net result was a saving of 30% in cost installed, with engineering specifications met in all respects.

We can show you how these engineering plastics are used by many leading manufacturers to save operations... to improve product performance and appearance. Ask, too, for our monthly "Plastics News" with reports of interesting applications. Write...

Durez Plastics & Chemicals, Inc., 1908 Walck Rd., N. Tonawanda, N. Y.



MOLDING COMPOUNDS. Structural, electrical, and chemical properties in many combinations.

PHENOLIC PLASTICS

for the new Competitive Era



RESINS FOR INDUSTRY. Bonding, casting, coating, laminating, impregnating, and shell molding.

The Trend of BUSINESS

the lumber and automotive lines held steady, while moderate increases prevailed in other lines.

Little change occurred between May and June in seven of the nine major geographic regions. However, New England casualties fell to the lowest level this year, and those in the Pacific States climbed to a record high, due largely to an upswing in California. Contrary trends prevailed within the Middle Atlantic States; failures in New York dipped to the smallest number so far in 1954 while the toll in Pennsylvania reached a post-war peak. All regions except New England reported heavier casualties than in June 1953, with the most notable increases from last year occurring in the South Atlantic and West South Central States.

All of the June upturn was concentrated in the non-metropolitan districts. Mortality in most of the 25 largest cities dipped or held steady. Only two cities had notably higher failures, Philadelphia which had the most since June 1949, and Indianapolis where a post-war high was established. In both the large cities and the balance of the country, business mortality exceeded last year's level.

THE FAILURE RECORD

	June 1954	May 1954	June 1953	P.C. Chg't
DUN'S FAILURE INDEX*				
Unadjusted.....	42.5	43.1	35.4	+20
Adjusted, seasonally	42.9	41.0	35.8	+20
NUMBER OF FAILURES	965	943	817	+18
NUMBER BY SIZE OF DEBT				
Under \$5,000....	119	149	139	-14
\$5,000-\$25,000...	497	482	395	+26
\$25,000-\$100,000	268	243	233	+15
\$100,000 and over	81	69	50	+62

NUMBER BY INDUSTRY GROUPS

	June 1954	May 1954	June 1953	P.C. Chg't
Manufacturing....	208	200	145	+43
Wholesale Trade..	89	91	80	+11
Retail Trade.....	455	460	419	+9
Construction.....	132	111	99	+33
Commercial Serv..	81	81	74	+9

	(LIABILITIES in thousands)			
CURRENT.....	\$41,613	\$38,494	\$32,379	+29
TOTAL.....	41,613	39,068	32,454	+28

*Apparent annual failures per 10,000 listed enterprises, formerly called DUN'S INSOLVENCY INDEX
†Per cent change, June 1954 from June 1953.

BUSINESS FAILURES include those businesses that ceased operations following assignment or bankruptcy; ceased with loss to creditors after such actions as execution, foreclosure, or attachment; voluntarily withdrew leaving unpaid obligations; were involved in court actions such as receivership, reorganization, or arrangement; or voluntarily compromised with creditors out of court.

CURRENT LIABILITIES, as used in the Failure Record, have a special meaning; they include all accounts and notes payable and all obligations, whether in secured form or not, known to be held by banks, officers, affiliated companies, supplying companies, or the Government. They do not include long-term, publicly held obligations. Offsetting assets are not taken into account.



Saves Typing Time...
Stops Eye Fatigue!

PANAMA "COPY-HOLDER" BOX

Panama-Beaver's exclusive patented carbon paper box has a built-in copy holder that flips open with a flick of the wrist. Keeps copy material upright and in full view... speeds work... cuts office costs. Folds up neatly under box lid after use. COSTS NOTHING EXTRA when you buy Panama-Beaver Carbon Paper—America's sharpest-writing, cleanest-erasing smudge-free carbon!

Have the Panama-Beaver representative near you show you the Copy Holder Box without obligation!

PANAMA-BEAVER
Ribbons and Carbons

Coast to Coast Distribution

MANIFOLD SUPPLIES CO., 19 Rector St., N.Y. 6, N.Y.

Ebony Duplicating Carbons • Eye-Saver Unimasters • Lustra Colorful Inked Ribbons

SAVE 20%
on sealing costs!



"Dial" gummed tape electrically

The new Marsh Dial-Taper is real news to users of gummed tape. Dispenses all kinds, in widths to 3", electrically. Select your length on the telephone-type dial, dial it, and out it shoots moistened with warm water. Sticks instantly. Saves 1/5 on tape, often more in man-hours.

For more information or a free demonstration mail us this ad with your name and business letterhead

MARSH Electric
Dial-Taper

MARSH STENCIL MACHINE COMPANY
62 MARSH BLDG. • BELLEVILLE, ILL.



**Cities Service
gives a big boost...**

Every minute, day in day out, 1,200,000 cubic feet of natural gas are pushed through pipe lines by the 220,000 horsepower in our booster stations.

CITIES  SERVICE

A Growth Company



is
your
office
wasting
plant
profits?

The efficient techniques which have enabled American industry to increase production, lower costs and build customer good will, have not been equalled by office management methods.

In 1920, 11 people were employed in clerical jobs for each 100 plant workers. In 1954, the ratio is 25 to 100. Wages have skyrocketed. Hours are shorter. More high salaried supervisory executive jobs have been created. In many cases, office overhead is losing money almost as fast as the plant makes it.

This is the time for top executives to think in terms of modernization which will bring "office" costs down to a point which protects your profit-wise production controls. Ask yourself this question, "In today's highly competitive market, can we afford to pay an 8-hour a day salary for a 6-hour a day job?" Dictograph Inside Communication, specifically geared to your needs today,

DICTOGRAPH... THE BIG NAME IN PROFIT-MAKING INSIDE COMMUNICATION, DESIGNED TO SERVE THE SPECIFIC NEEDS OF EVERY BUSINESS, INDUSTRY, INSTITUTION AND BRANCH OF GOVERNMENT.



NOW! INSTANT, CONFIDENTIAL, PERSON-TO-PERSON COMMUNICATION... *Miracle-Page* enables you to receive a completely confidential message anywhere in your organization. To reply, you employ the nearest instrument of inside communication. *Miracle-Page* is effective alone or can be used with any Dictograph performance perfect communications system.

Miracle-Page is smaller than a pack of cigarettes... the transistor-receiver weighs less than 3 ounces. The tiny, acoustically precise, lapel speaker provides complete "Audio-Mobility!"



Dictograph

the voice of successful American business since 1902

Dictograph Products, Inc.

95-25 149th St., Jamaica, N. Y.

Please send full information regarding:

- ☐ Dictograph's "Self-Liquidating" Rental Plan
☐ Guaranteed-Profit Inside Communication
☐ *Miracle-Page*
☐ Have your representative call

DR-8

Name.....
Institution.....
Address.....
City.....Zone.....State.....



LEASING

Continued from page 23

ing Procedure of the American Institute of Accountants states, "However, the committee is of the opinion that the facts relating to all such leases should be carefully considered and that, where it is clearly evident that the transaction involved is in substance a purchase, then the 'leased' property should be included among the assets of the lessee with suitable accounting for the corresponding liabilities and for the related charges in the income statement."

Fortunately, most of the proposals are lease agreements in fact as well as name. The lessor retains title to the equipment and there is no clause providing for purchase by the lessee. Under these proposals, the lessor agrees to supply specified equipment for a stated monthly or annual rental. Terms vary as to the minimum period of time of rental, provision for renewals and cancellations, frequency of replacement of used equipment with new equipment, insurance coverage, and responsibility for repairs and maintenance. Because of the many variations in the proposals, it is desirable initially to analyze all of them, in order to appraise their soundness and desirability.

The points for consideration in the analysis are suggested by the promotional material of the lessors setting forth the advantages of their plans over purchase. Each includes one or more of the following:

1. Saving or release of working capital which, under ownership, would be invested in fixed assets.
2. Lower costs—operating, purchasing, and equipment records.
3. Saving of management time.
4. Deduction of rental fees for income tax purposes.
5. Elimination of risk of obsolescence when period of use is short or indeterminate.

In discussing these considerations certain assumptions will be made: (1) that there is a need to replace old or buy new equipment, (2) that the alternative is between ownership or leasing and not between company ownership or employee ownership, as for salesmen's automobiles, and (3) the term "equipment" includes all long-life assets, except land and buildings.

There can be no question as to

What color
should you paint
a belt
conveyor?

Most of them
are painted green.
And if you get a
BARBER-GREENE
Conveyor,
it's already painted.
That's just part of
B-G's complete
standardization.

NEW! The most complete, comprehensive, easy-to-use Conveyor Catalog ever published. See your Barber-Greene Distributor or request Cat. 76-A on your company letterhead.

Barber-Greene
AURORA, ILLINOIS, U. S. A.

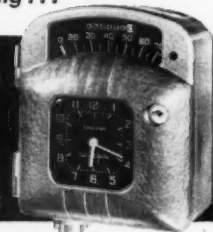
Tachographs

THE TIME-TESTED RECORDING SPEEDOMETER

Cut costly truck
maintenance and encourage
better driving...

ALL THIS CHARTED
FOR YOUR RECORDS

- WHEN ENGINE STARTED
- HOW FAST IT TRAVELED
- WHEN VEHICLE WAS IN MOTION
- WHEN VEHICLE STOPPED
- HOW LONG IT IDLED
- DISTANCE BETWEEN STOPS



Automatically controlled, needle-like points record all vital information on a wax-coated chart which is placed inside the Tachograph at the start of each day. In addition Tachograph-equipped vehicles have fewer accidents, spend less time in repair shops, save gas and tires, and earn lower insurance rates. Coupon below will bring you copy of Bulletin SU-3.

Drivers Like
TACHOGRAPHS

They help them become better drivers—they correct bad driving habits and give protection against false accusations.



Wagner ELECTRIC CORPORATION
6439 Plymouth Avenue, St. Louis 14, Mo.

Please send me free bulletin SU-3

NAME.....

COMPANY.....

ADDRESS.....

CITY.....STATE.....

We operate (number).....vehicles

SSA-11

Why

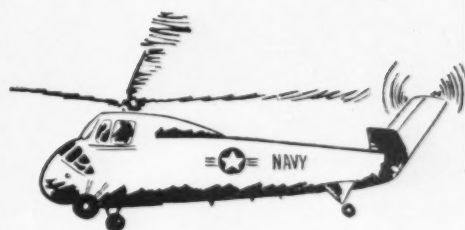
do most types of 'copters fly with Lycoming-built engines?



Lycoming-powered* Piasecki H-21
Matériel and Troop Transport



Lycoming-powered Kaman HTK-1
Military Trainer



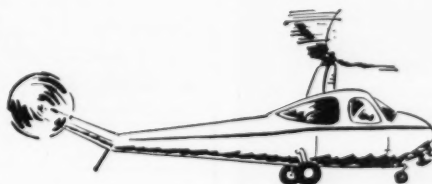
Lycoming-powered* Sikorsky S-58
Anti-Submarine 'Copter



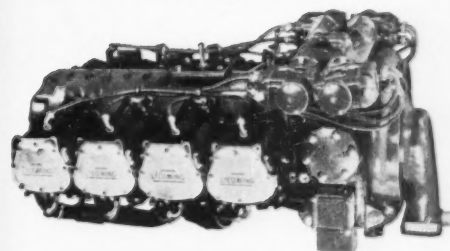
Lycoming-powered Dornier L-25
General Utility 'Copter



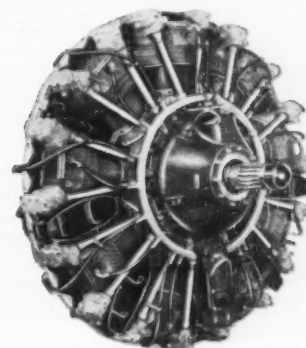
Lycoming-powered Brantly Model B-2
Personal 2-place 'Copter



Lycoming-powered Glenview FlyRide
Personal 2-place 'Copter



4-, 6-, and 8-cylinder opposed
air-cooled engines



7- and 9-cylinder radial
air-cooled engines*


The answer is simple: Lycoming builds more types of power plants designed for varied types of helicopters than any other engine manufacturer. Some users are shown above.

Since 1940—when Lycoming powered the pioneering Vought-Sikorsky 300—Lycoming has produced engines ranging from 135 to 1500 horsepower.

If your problem is air-cooled power . . . precision parts . . . volume fabrication . . . or "just an idea" in the rough or blueprint stage that needs development . . . look to *Lycoming*. Long famous for metal-working skills, Lycoming meets the toughest specifications of exacting customers, both industrial and military.

FOR RESEARCH • FOR PRECISION PRODUCTION

LOOK TO **Lycoming**

DIVISION OF  STRATFORD, CONN.
Manufacturing plants in Stratford, Conn., and Williamsport, Pa.

ENGINEERS WANTED:

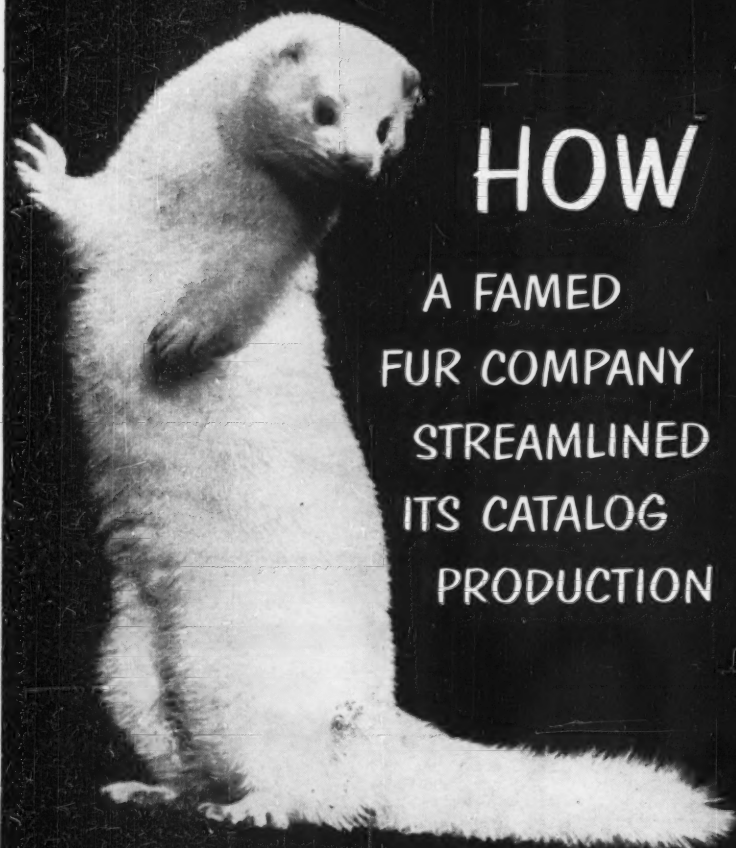
Long-term U.S. Air Force contracts for gas-turbine power plants provide unlimited opportunities for top-flight experienced engineers. Opening, too, in radial engine development, in stream, analytical, and assistant project engineers. Write Vice-President, Industrial Relations, Stratford, Conn.

LYCOMING TURBINE ENGINES

Still "under wraps," being developed for the Military. New Lycoming "pioneers" that promise greater efficiency, greater economy, more brilliant performance than any helicopter engines ever before developed.

*Wright-Cyclone engine, built by Lycoming under license from Curtiss-Wright Corporation, Wright Aeronautical Division.

AIR-COOLED ENGINES • PRECISION PARTS • TURBINE RESEARCH & DEVELOPMENT



HOW A FAMED FUR COMPANY STREAMLINED ITS CATALOG PRODUCTION

By changing to Colitho Off-set Duplicating Plates the famous Hudson's Bay Company Fur Sales Inc. has cut production time for a 300-page catalog by 80%. The substantial amount of overtime required to keep up with the vast load of detail was completely eliminated. Hudson's Bay Company's big problem was the seemingly endless task of preparing two separate and complete sets of catalogs, containing essentially the same information, for the buyers and the confidential house editions. Colitho Plates enable them to produce

both editions from one set of master plates. Typing time has been drastically reduced—hours of costly supervisory checking saved—and all risk of transcription errors removed.

This case history demonstrates the economy and efficiency that countless businesses enjoy by using Colitho Plates. Whether your problem is in finance, management, production or sales, there is a cost-cutting solution for you in Colitho Products. Send for the free Folio of Colitho Application Ideas, and find out how your business can benefit.

Colitho

THE "ONE-WRITE" WAY TO RUN A BUSINESS

Colitho Division, COLUMBIA RIBBON AND
CARBON MFG. CO., Inc.
808 Herb Hill Road, Glen Cove, N. Y.

Send me the Folio of Colitho Application Ideas.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

the freeing of working capital for other purposes if equipment is leased instead of purchased. If a shortage of working capital exists, or is forecast, the question is, shall we borrow money to purchase needed equipment or shall we lease the equipment? Apart from the effect on costs, discussed later, this question must be answered on the basis of the effect on the balance sheet and the extent of possible business risks.

Watch Ratios

Leases are not reflected in the balance sheet and thus do not affect financial ratios. Borrowing money on short-term notes to purchase equipment reduces the ratio of current assets to current debt. Management must weigh the effect on the current ratio in relation to the probable need for future borrowing and to their desire to maintain a minimum current ratio. Consideration must also be given to the need for higher inventories to provide immediate delivery in a period of intense competition and the probable slowing of customer payments.

It is possible that borrowing will be necessary to provide funds for

these and that, under these conditions, it would be prudent to lease equipment rather than to borrow the money to buy it. Of course, if borrowing capacity is exhausted, leasing may prove to be the salvation of the business as the only means of acquiring equipment for expansion or cost reduction.

In appraising relative risk to the prospective lessee it must be remembered that a lease covers a specific piece of equipment. If circumstances prevent the payment of rent, the lessor can take possession of the equipment. A short-term loan is usually made on the general credit of the company. If an interest payment is missed there is less possibility of the lender taking possession of the very equipment which may be needed to produce income to meet the payments.

Cost considerations affect the decision to borrow money to buy equipment versus leasing it, as well as the decision to lease when funds are available for outright purchase. Coincident with the effect on cost is the effect on profit after tax and on operating ratios. Many companies consider the return on capital em-

*Service award
Programs don't
JUST HAPPEN!*

Careful planning and preparation are important components of a successful service award program.

I & R specializes in "setting-up" service award programs tailored to individual requirements. Suggests types of awards to select, time and methods of awarding and numerous other aids to insure a successful smooth-operating program.

We would appreciate the opportunity to help make your program a success.

IRONS & RUSSELL COMPANY
Emblem Manufacturers Since 1861
95 Chestnut Street, Providence 3, R. I.

**1904
REVOLVATOR
50th Anniversary
1954**

**REVOLVATOR
GO-GETTER
Lift Efficiency**

**Door-to-Door Warehouse
Handling Efficiency**

For the efficient flow of goods within and without a plant — from production to storage — to shipping — there is no lift truck on the market today that surpasses the Revolvator Go-Getter line.

Illustrated above is the high lift model Go-Getter—a favorite of the food producers — accepted throughout all industry. In 2000-3000 lb. capacities — remarkably adept in narrow aisle work, the Revolvator Go-Getter high lift truck permits great economies in warehousing.

Write for the full facts today.

REVOLVATOR CO.
8702 Tonnele Ave. North Bergen, N. J.

ployed to be a most important ratio indicating management effectiveness. They take as capital employed the total assets of the company or the total assets assigned to a segment of the company. Net profit is related to capital employed to establish the return on capital employed.

Cost Alternatives

Since return on capital employed can be increased by (1) increasing sales volume without an equal increase in cost, (2) reducing cost, and (3) reducing capital employed, management is constantly seeking means of achieving any one of these results. The leasing plans offered to them appear to provide a solution to their problem of keeping capital employed at a minimum. In determining the effect of leasing or buying on costs and operating ratios, it is possible to make definitive evaluations of the alternatives. Examples of such evaluations follow.

Probably the earliest lease proposals, and the most numerous today, are for automobiles and trucks. Evaluation of these is comparatively easy, for most companies maintain cost records for automotive equip-

ment or, if they do not, they can construct the costs which will be affected from the general books. Although there may be wide variations in the proposed terms of rental, it is generally practical for evaluation to follow the same pattern, that is, comparison of the annual cost under the rental agreement with the cost of operating company-owned cars for the past year.

The operating costs of the owned cars are taken from the detailed automobile operating cost records. These costs are segregated into those which would and would not be incurred if the cars were leased. Operating costs not included in the rental charges are then added to the annual rental price and the total compared with the total annual cost of ownership.

Consideration is next given to interest on the investment in cars, the investment being the depreciated value of the fleet owned. Costs of acquisition and record-keeping are estimated and included in the comparison, even though it is believed that these could not be eliminated if cars were leased, because they are incurred in many departments. The

Just press a button



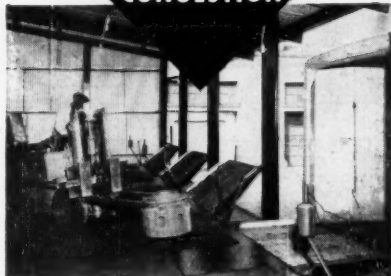
YOU SUPERVISE THE WORK OF EVERY MAN —EVERY MACHINE!



IN A SMALL PLANT radio adds real value to the few vehicles employed. Use it to increase payloads per hour . . . cut way down on demurrage expense!

IN A LARGE PLANT radio shrinks truck travel distance. Instant contact makes deadheading back to the dispatcher for instructions a thing of the past!

LOW-COST SOLUTION TO LOADING DOCK CONGESTION



RITE-HITE

ADJUSTABLE

LOADING RAMP

Becomes a permanent part of your dock . . . keeps trucks and dock traffic smoothly on the move.

Simple, precision counterbalanced mechanism. No pipes, pumps, gears, motors. Little or no maintenance required. Horizontal adjustment feature reduces truck maneuvering.

Proven in use by dozens of leading commercial and industrial plants.*

3 types, 5 models . . . capacities 10,000 and 20,000 pounds. Priced from \$395.

*Names on request.

RITE-HITE DIVISION
LOOMIS MACHINE COMPANY
FOURTH AND PINE STS., CLARE, MICH.

Send for full details. Write Dept. D-44

UGH!

"DRAG 'EM ON THE BOTTOM" with old-style filing folders

OR—

"GLIDE 'EM AT THE TOP" with

FASTEST, EASIEST FILING EVER!

Oxford PENDAFLEX® HANGING FOLDERS

Oxford Filing Supply Co., Inc.
88 Clinton Road, Garden City, N. Y.
Please send free PendaFlex catalog to

NAME _____

STREET _____

CITY _____



2-WAY MOBILE RADIO

FREE! Get this booklet and see how G-E 2-way radio communication efficiently organizes industrial production. Write: General Electric Company, Section X7884, Electronics Park, Syracuse, N. Y.



Good supervision of men and machines in any plant quickly shows up on the profit side of the ledger. And, that key role is the exact function of 2-way radio in industry today! Production handling instructions can be sent and acted on seconds later! Radio equipped trucks speed the flow of material between departments . . . are always "on call" to complete a rush order or emergency operation.

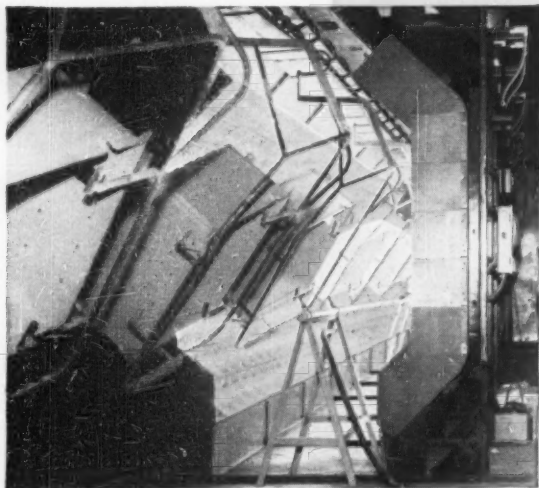
Examine its potential use in your plant today. A trained General Electric representative from our local office is available to assist you without obligation. Why not call him!

Progress Is Our Most Important Product

GENERAL ELECTRIC

HIGH SPEED BAKING

3 TO 10 MINUTE TIME—AUTOMATIC CONTROL



HANDLES ANY
MATERIAL
ANY SHAPE
ANY COLOR

In the "world's most modern refrigerator plant," The Hot-point Co., Chicago, Ill., uses this compact "J" shaped Fostoria Infra-red oven to dry vitreous enamel ground coat on refrigerator inner liners. Total heat zone time is 3 1/4 minutes. Operating load is 450 KW. Production rate is 140-160 liners per hour.

Profit WITH MODERN FOSTORIA OVENS

ALL THESE ADVANTAGES

FASTER CYCLES

Fastest heat transfer. Greatest output to input. Instant action.

LESS SPACE

Most production for oven size. May be ceiling mounted.

CLEAN OPERATION

No by-products of combustion. No condensation.

UNIFORM BAKE

Evenray heat distribution with thorough penetration.

FLEXIBILITY

Adaptable to any material, any shape, any color. Infinitely variable heat levels.

SAFETY CONTROLLED

No warm-up, no shut-off lag. Instant heat control.

LESS MAINTENANCE

Lowest source replacement cost. Least efficiency loss.

HIGHEST EFFICIENCY

Less than 2% energy loss. Heats product—not oven walls.

CUTS COSTS

Lowest "per piece" production cost. Competitive initial cost.

RELIABILITY

Foremost engineering "know-how" and service.

Greater production efficiency is the keynote for the competitive era ahead. New methods, new modern equipment are vital to reduce man-hours, lower production costs, increase sales demand. For baking and drying operations, the modern Fostoria Infra-red Oven provides an array of cost-saving, quality-improving advantages. By far the most efficient of all industrial ovens, as thoroughly proved in over 7,000 plants, Fostoria gives the most productive output to energy input, PLUS the greatest production in the least space, PLUS the fastest time cycle, PLUS automatic control. For lowest "per piece" production cost, for finest quality baking, for the competitive efficiency of your plant, compare your present equipment. The expert on-the-job assistance of a Fostoria field engineer is promptly available to you without obligation.



SEND FOR COMPLETE FACTS

Write for this brochure of technical facts and case histories of many Fostoria oven installations. Tell us your particular problem and we will include data directly applicable to your operation.

THE FOSTORIA PRESSED STEEL CORP.
Fostoria, Ohio, Dept. D

Please send information on ovens for

Name _____

Company _____

Street _____

City _____ State _____

INFRA-RED
fostoria
OVENS

PRODUCTION PROVED IN OVER 7,000 PLANTS

America's Finest Engineered Ovens

total cost of ownership is then compared with that of leasing.

The automobile records may disclose that the company realizes a profit on its used cars sold and replaced with new ones. This profit on sale of used cars should be deducted to arrive at the net cost of ownership as arrived at for comparison with the cost of leasing.

If these comparisons show a cost advantage of ownership, the advantage is reduced by the applicable normal tax and surtax (52 per cent) to arrive at the after-tax net profit advantage of ownership. Since the company sells its used cars and treats the profit as a capital gain, the after-tax figures reflect a retention of 75 per cent of this profit. The after tax effect is determined in every instance because deductibility of rental for tax purposes is emphasized in so many of the proposals.

While the study might show leasing to be more costly than ownership, a conclusion should not be drawn until the effect on the return on capital employed is determined. It could be that the reduction in assets resulting from the sale of presently owned automobiles, assuming the proceeds were used to reduce current liabilities, would be great enough to offset the effect of less profit.

Thus we can conclude that, in appraising purchase versus lease on the basis of the effect on the return on capital employed, it is:

1. Advantageous to purchase rather than lease if the net profit dollar advantage of ownership is higher as a percentage of the book value of the equipment purchased than the average return on capital employed.

2. Disadvantageous to purchase rather than lease if (a) the net profit dollar advantage of ownership is lower as a percentage of the book



"It's pasteurized, homogenized, irradiated, carefully sealed, and comes from a cow named Sylvia."

NOW!

Quickly, Easily, Effectively Destroy confidential papers, records in your own office!

NEW SHREDMASTER

Bantam 10

portable shredding machine designed especially for office use! Quiet, compact, streamlined!

Never before an office shredding machine combining the speed and economy of the new SHREDMASTER BANTAM 10. Anyone can operate it. No fuss, no trouble! Greater cutting width, speed, capacity, and power than ever before! Safety throat! Smart functional design, about size and weight of business typewriter.

Priced well within the budget of all businesses - large or small.



YOUR PAPERS
GO IN HERE

FREE: Colorful, illustrated, descriptive folder, includes 10 DAY FREE TRIAL details. Write "SHREDMASTER BANTAM 10" on your letterhead or postcard, and mail today to:

UNREADABLE
SHREDS COME
OUT HERE

The SHREDMASTER

Corporation

A Division of Self Winding Clock Company, Inc.

195 Willoughby Avenue
Brooklyn 5, N. Y.

the
**AMERICAN
APPRAISAL**
company

leader in
property
valuation

**DRAKE, STARTZMAN, SHEAHAN
AND BARCLAY**

Distribution and Materials
Handling Consultants

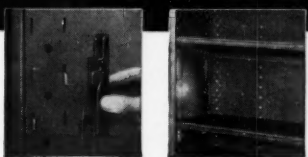
CONTROL, MOVEMENT and STORAGE
OF MATERIALS

41 East 42nd Street New York 17, N.Y.



The
erected
cost is
the real
cost

**De Luxe steel
shelving
costs less!**



De Luxe bin type "I-Beam" uprights are designed to eliminate parts . . . make erection easy. De Luxe Shelving erects on the spot, in position where you want it.

Patented boltless shelf brackets eliminate 80% of the bolts and no tools are needed for adjusting.

Shelves in each section are independently adjustable, without disturbing other contents.

For complete engineering, planning and layout service, there is a De Luxe factory representative near you, ready to serve you without obligation.

Write for a free catalog now, while your mind is on shelving.



De Luxe Metal Furniture Co.
301 Struthers Street • Warren, Pa.

For over 25 Years Manufacturers of:
Storage Shelving • Library Shelving
Storage Cabinets • Shop Equipment

value of the equipment purchased than the average return on capital employed, or (b) costs of ownership are higher than costs of leasing.

These conclusions are illustrated further by the following study of leasing or purchasing machine tools. For this type of equipment the proposals are less uniform in rental rates and conditions of lease than those for automobiles. A typical evaluation study is shown in the table on page 23. This is for the rental of machine tools which should be depreciated over a period of fifteen years, or over a period of ten years with a salvage value of one-third of the purchase price at the end of the tenth year.

Rental payments include insurance of the machine. All other costs, including maintenance, are borne by the lessee. Rental rates are quoted per \$10,000 of the list price of the machine tools for each year of a ten-year period and are high in the early years and decline to nominal rates in the later years. In computing the cost of ownership, interest is included at 3.5 per cent of the average book value of the equipment in each year. This average is



HIBBS PHOTOGRAPH

computed as the book value at the beginning of the year less one-half of the depreciation for the year.

In this illustration, there is a profit disadvantage in leasing during the first five years of the lease and a profit advantage during the second five years. Over the ten-year period, net profits will be higher by \$2,132 per ten thousand dollars of list price if the machine is purchased instead of leased and the owner will have a machine with a book (and salvage) value of \$3,330. Assuming the machine is sold for book value at the end of the tenth year, the owner will have a net profit and a net cash advantage of ownership of \$2,132.

This illustration reflects depreciation on the straight-line method.



Check
with us for immediate
recommendations from
your samples or
specifications . . .

Brass

SHEET, STRIP • FORMED, FABRICATED



THE PLUME & ATWOOD MFG. CO.

Main Office and Fabricating Div.: 530 Bank St., Waterbury, Conn.

Mill Div.: Thomaston, Conn.

N. Y. Office: 220 Broadway

**ARE YOU WASTING TIME AND EXPENSIVE LABOR?
COMPARE YOUR METALWORKING METHODS
WITH THIS**

PULLMAX

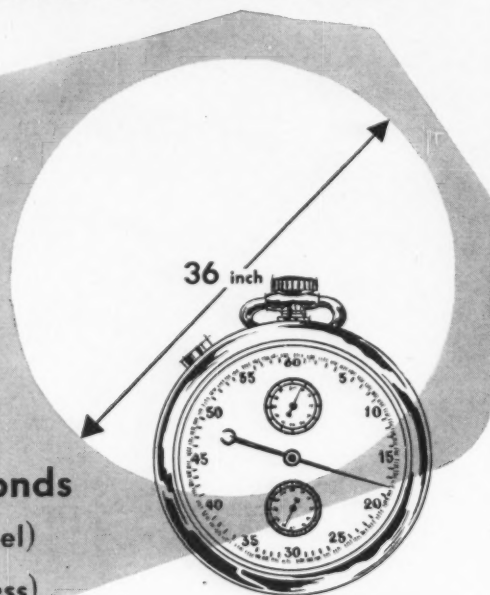
CUTS A

**36 inch
CIRCLE**

in 18 seconds

($\frac{1}{4}$ " mild steel)

($\frac{3}{16}$ " stainless)



Even veterans of the metal working industry watch with open-eyed amazement as Pullmax cuts large circles from heavy gauge steel in a matter of seconds. This job was done on a Pullmax Major with a power feed attachment that cuts 32 lineal feet per minute (also applies to straight shearing). There are 9 sizes and capacities of Pullmax machines to choose from that work the thinnest gauges up to $\frac{11}{32}$ " in mild steel. Use them for straight, circle, irregular or slot cutting, as well as beading, folding, dishing and louversing in mild or stainless steel, non ferrous metal, wire mesh or plastic.

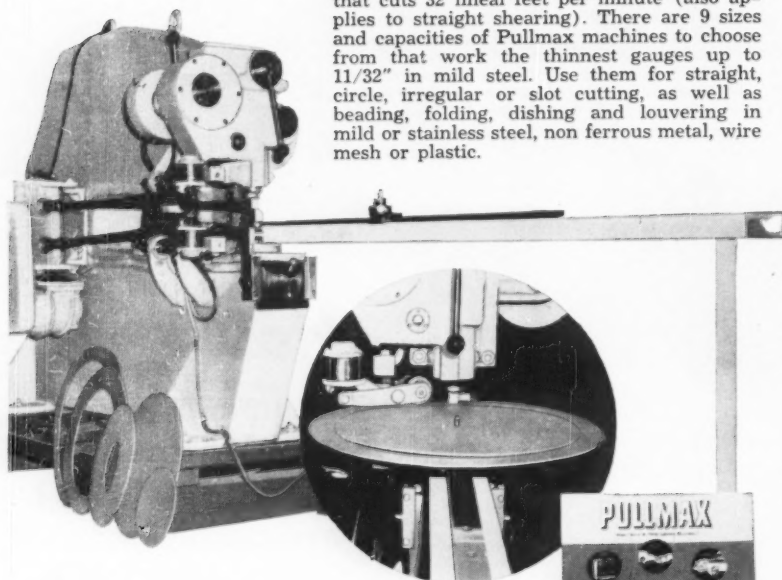


Illustration shows Pullmax Major with outside centering device which cuts circles of unlimited diameters.



**Write for this Catalog of
Money-Saving Metal Working Ideas**

AMERICAN PULLMAX COMPANY, INC.

2483 North Sheffield Avenue

Chicago 14, Illinois

Other methods of computing depreciation would change the comparative annual and total costs. Also, a uniform tax rate is used. Higher tax rates in the earlier years than in the later ones would also change the comparative costs.

To go further and to determine the effect of machine tool rental on return on capital employed, it is assumed in the study that a company finds it necessary to replace a machine which is fully depreciated. It is also assumed that cash will be used to reduce current liabilities if a machine is leased. Thus, the effect of the purchase of a machine for \$10,000 would be to employ more capital than if the machine were leased. Before acquisition of the new machine the capital employed was \$5 million and net profit was \$350,000, a return of 7.0 per cent. All other assets and costs, except those incident to the purchase or lease of the replacement machine, are assumed to remain constant over the ten-year period.

Reflecting these assumptions, the return on capital employed is shown on page 65 for the \$10,000 replacement machine, first as a purchased

and then as a leased item. The added capital employed and the changes in net profit are based on the schedule already shown in the table on page 23. Comparison of the return on capital employed shows that, if the machine is leased, the return is lower for the first two years and higher thereafter, than it is if the machine is purchased. This is the result of the ratio of the profit advantage of ownership to the amount of capital required for ownership.

This study reveals a peculiar situation. There is a net profit advantage of ownership in total over the ten-year period, profit advantages in the first five years more than offsetting profit disadvantages in the last five years. On the other hand, ownership results in a better return on capital employed in only the first two years of the period. Over the ten-year period of ownership, the average additional capital employed shows as \$6,670 and the net profit improvement is \$2,132, a ratio of 32 per cent, or a straight arithmetical average of 3.2 per cent per year. Since this is less than the average return experienced before replacement, it obviously results in a re-

Subscription Order Form

DUN'S REVIEW and Modern Industry
99 Church Street, New York 8, N.Y.

One year subscription to U. S. A. and Possessions, Canada - \$5. Elsewhere, \$10.

Enter my one-year subscription

☐ **Payment Enclosed or**

☐ **Bill Me**

Send to

Name _____

Firm _____

My Title _____

Address _____

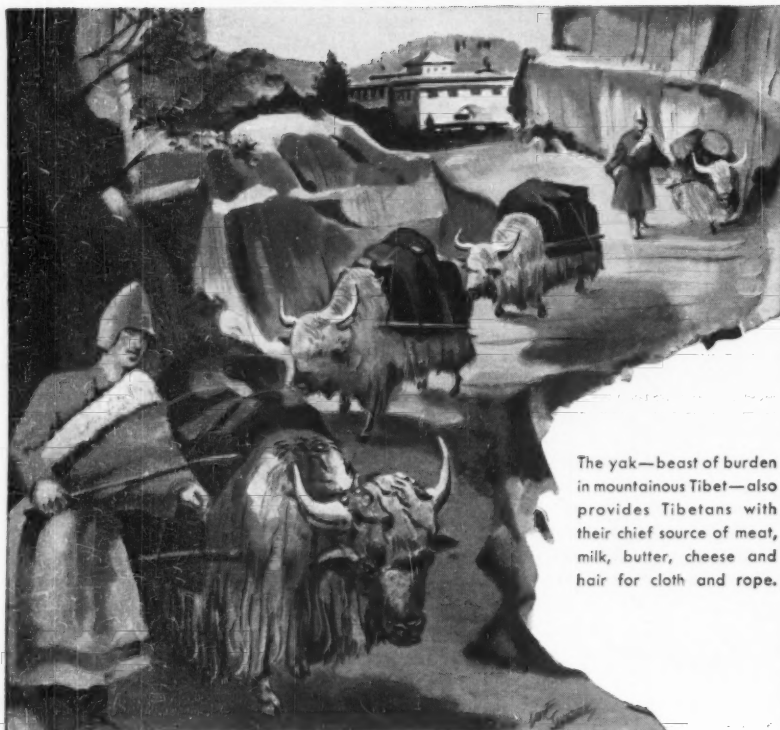
*AUTOMATION

brings production line efficiency
to your figuring problems

Exclusive *AUTOMATION
speeds all figuring work...
makes Monro-Matic the most
economical automatic calculator!

Here is an entirely new, an incredibly *simple*
concept of figuring control. To operate the
Monro-Matic requires no more skill than—
1) feed it figures... 2) push buttons.
That's all. Anyone can do it. The Monro-Matic
controls itself—automatically! Try the Monro-
Matic with exclusive automation a week or so
on your own figure work, in your own office—
on us. Monroe Calculating Machine Company,
Inc., Orange, N. J. Sales and service everywhere.

OPERATORS WHO KNOW... PREFER **MONROE** CALCULATING, ADDING, ACCOUNTING MACHINES



The yak—beast of burden in mountainous Tibet—also provides Tibetans with their chief source of meat, milk, butter, cheese and hair for cloth and rope.

MULTI-PURPOSE CONVEYORS

Modern industrial conveyors are frequently designed to accomplish more than one useful production operation.

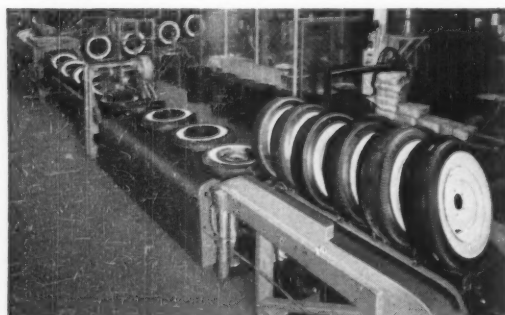
That's why some of Allied's most interesting and unusual installations have been those that best illustrate Allied ability and versatility for creating multi-purpose material handling equipment.

Allied have been Automation spe-

cialists for years—their installations include various types of conveyors, multiple transferring equipment, and highly engineered, fully automatic material handling systems.

If you are faced with a peculiar kind of material handling problem, you can confidently expect Allied to come up with a dependable and efficient solution.

PIONEERS IN AUTOMATION ... the design and fabrication of fully automatic mechanical handling systems



One example of highly specialized Multi-purpose Equipment is this combination Tire Inflator, moulder and conveyor, designed and built by Allied for an automobile manufacturer.

For further information request Allied Catalog 953

ALLIED AUTOMATION DIVISION
ALLIED STEEL and CONVEYORS, INC.
17367 Healy Avenue, Detroit 12, Michigan



duction in the average return after replacement of the machine by purchase. In this case, the weight of evidence is on the side of leasing.

As to income tax considerations, if a lease agreement is a lease in part, there is no question as to the deductibility of the rent. But, if the equipment is owned, the depreciation and interest on any money borrowed to finance the purchase are deductible. Therefore, the tax advantage of leasing is not a problem of deductible costs versus non-deductible costs. It is a question of how much is deducted and in which years it is deducted.

In any year or period of years the alternative which has the cost and return on capital employed advantage after tax is the better choice, and taxes need be considered only to the extent that they affect profit. Certainly management does not want to incur high costs simply because they are deductible for tax purposes when the same production or service could be secured for lower costs. At anything short of a 100 per cent tax rate some of the cost saving is retained as net profit.

When the period of use of equip-

ment is short, a strong case can be made for leasing. It is recognized that the loss in value of many items of equipment is greatest in the earlier periods of their life; for example, automobiles. The cost of leasing for a short term, since the lessor will have opportunities for subsequent leases to others, will usually be substantially less than the net cost of purchase less recoverable value from sale after use. When the equipment requirements are of uncertain duration leasing will eliminate the possibility of high obsolescence.

Defense Work

When equipment is needed for Government contracts the period of use is usually indeterminate and leasing may be desirable if rental costs can be recovered in the contract price. If they can it is of no importance if they are higher than costs of ownership. Also, in acquiring equipment for defense work, leasing may circumvent the problems of securing certificates of necessity for accelerated amortization.

Finally, there is one factor which is of prime importance to the lessee

**Generalift
Pallet
Boxes
CUT
HANDLING
and STORAGE
COSTS
50%**

Send for free booklet

ENGINEERED CONTAINERS FOR EVERY SHIPPING NEED

General Box
1861 Miner Street, Des Plaines, Illinois

and that is the financial strength and general stability of the lessor. If a substantial portion of the production or service assets of a company are to be leased there should be reasonable assurance that the lessor will be able to offer the lease arrangements on reasonable terms indefinitely. Otherwise a company may find that it suddenly has to find new sources for equipment.

Conditions may force them to buy it after they had lost their contacts with suppliers, through leasing over a period of years. And, they may be forced to buy, or to pay substantially higher rental costs, at a time when they can ill afford to deplete their working capital or incur higher costs.

In short, the question, "Shall we lease or buy equipment?" cannot be answered with a simple yes or no. Neither can definitive evaluations be made which will provide all of the answers. Cost evaluations of lease proposals are essential so as to provide factual information as a basis for management decision. With the tangibles set forth, it may not be necessary to consider the intangibles. However, if it is, they

will be in better perspective if a sound study has been made. The studies given as illustrations show how these evaluations can be made. They were not presented to provide the answer to the question, "Shall we lease or buy equipment?" Every proposal must be analyzed in the light of specific conditions in each company, considering both the tangible and the intangible factors.

THE END

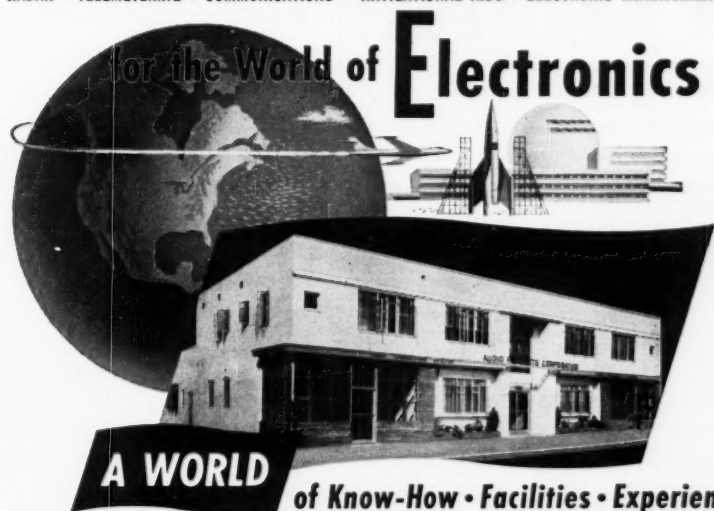
RETURN ON CAPITAL EMPLOYED

Based on Average Capital and Net Profit*

Year of Use	Owning (%)	Leasing (%)
1	6.9765	6.9626
2	6.9777	6.9712
3	6.9788	6.9798
4	6.9800	6.9846
5	6.9811	6.9885
6	6.9823	6.9923
7	6.9834	6.9952
8	6.9846	6.9965
9	6.9857	6.9977
10	6.9869	6.9990

*Average capital consists of the \$5 million original capital plus the average book value of the purchased machinery; under a leasing arrangement, average capital would remain fixed at \$5 million. Net profit is \$350,000 minus the total cost (or rental) after tax at 52 per cent.

RADAR • TELEMETERING • COMMUNICATIONS • NAVIGATIONAL AIDS • ELECTRONIC MINIATURIZATION



for the World of **Electronics**

A WORLD of Know-How • Facilities • Experience

Audio Products Corporation accomplishments in the field of Electronics stem from more than 35,000 square feet of modern production facilities and a staff of engineers accustomed to working in the more advanced phases of electronic development. From basic design to prototype, to final engineering

tests, KNOWLEDGE, EXPERIENCE and FACILITIES are applied to deliver a finished product to meet the highest standards of performance and reliability. A host of successful electronic units for military agencies and commercial organizations the world over is the result.

AUDIO PRODUCTS CORPORATION

2265 WESTWOOD BOULEVARD, LOS ANGELES 64, CALIFORNIA

LOOK TO **DETREX** FOR



Add life to your product's paint finish . . . with

DETREX
Paintbond

Paintbond's fine-grained crystalline structure gives added life to paint finishes in two ways. First, Paintbond provides secure anchorage—literally locks paint to metal surfaces. It also stops corrosion in its tracks. If a painted surface gets scratched Paintbond minimizes the damage—confines rust to the scratched area—puts an end to paint flaking and peeling.

Paintbond adds life to product appearance, too. Its fine-grained crystals provide a smoother surface and thus a more lustrous paint finish for added product appeal.

Lower cost, flexible processing, too

On the job, Detrex Paintbond lowers costs by coating a greater surface area per drum of compound. Moreover, it has been proven that Paintbond substantially reduces maintenance, too.

You'll also appreciate its flexibility. Whether you apply it by spray or by immersion, Paintbond is easily controlled to give exactly the coating weight and crystal size you desire. All in all it adds up to real savings both in compound cost and operating costs.

PEDIGREE for PAINTED PRODUCTS

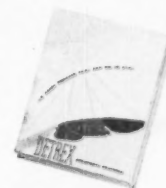


Detrex makes available to Paintbond users an attractively designed sticker for application on their finished products. At point of sale this sticker becomes another sales clincher for your product by informing the customer of the life-time, rust-free paint finish that Paintbond provides.

Like all Detrex processes, Paintbond is fully guaranteed. You can get all the facts by using the coupon below.

Please send us complete facts about Paintbond and how it will improve our finishes while cutting our costs.

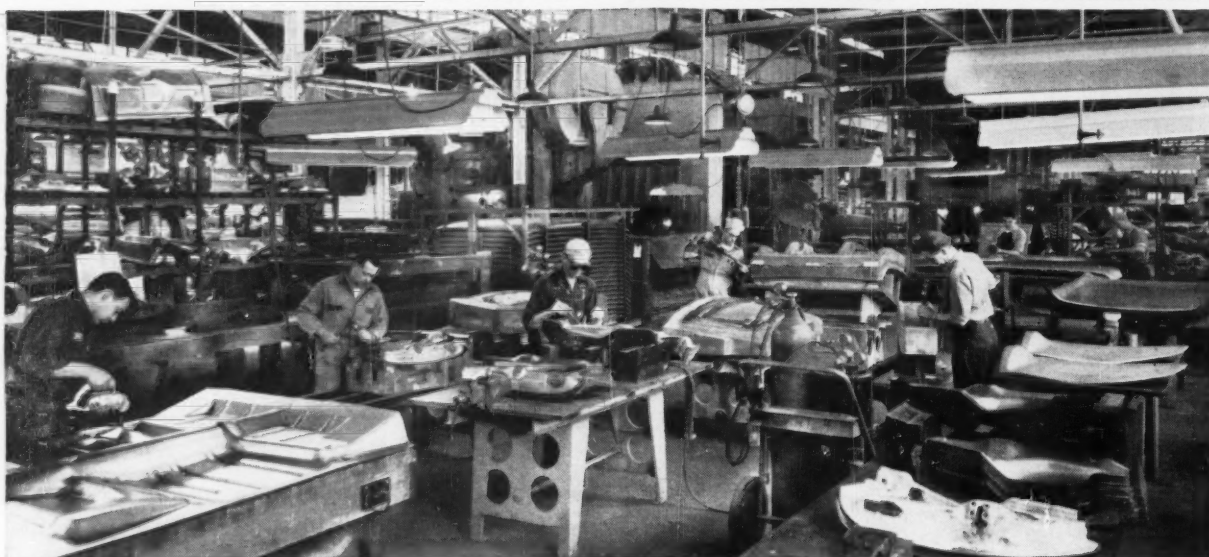
NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____



DETREX

CORPORATION

DEPT. PB-204 BOX 501, DETROIT 32, MICH.



... to Completely Finished **PROTOTYPE PARTS** **READY FOR ASSEMBLY**

Other Allied Products

**SPECIAL COLD FORGED
PARTS • STANDARD CAP
SCREWS • HARDENED AND
PRECISION GROUND PARTS
• R-B INTERCHANGEABLE
PUNCHES AND DIES**



It's Allied that offers the complete service to provide you with die-made prototype parts. Plaster patterns . . . low-cost, quickly-produced dies made of plastic or zinc alloy . . . stampings accurately drawn and formed on Allied presses . . . completed parts which have been hand trimmed, flanged, pierced and spot finished . . . are all produced by Allied.

Not only is full responsibility for such a prototype program centered at one source but many economies can be effected from which you as a customer can benefit. In the building of the dies, for example, combinations of plastic, zinc alloy or steel (all of which Allied supplies) give you the best and most economical tooling for your volume requirements. In the finishing processes, as one more example, the tools themselves are often used for flanging and other purposes—additional cost-saving and accuracy-assuring operations.

If you need sheet metal stampings for prototype assemblies, you should investigate Allied's all-inclusive service. A visit to our Plant 4 in Hillsdale, Michigan will convince you that here is a positive method of insuring an economical and rapid transition from prototype to high volume production. If a visit is not convenient, let us supply you with complete information.

ALLIED PRODUCTS CORPORATION

DEPT. D-19 • 12675 BURT ROAD • DETROIT 23, MICH.



PLANT 1
Detroit, Mich.



PLANT 2
Detroit, Mich.



PLANT 3
Hillsdale, Mich.



PLANT 4
Hillsdale, Mich.

NEW METHODS AND MATERIALS

Twenty ways to save time, cut costs, improve product quality

Putting your product on trial

HOW will your product stand the stresses and strains of its daily life? What will happen to it when it is pushed to extremes of speed, tension, or pressure?

Every company must answer questions like these to safeguard product quality, satisfy its finicky customers, and guide future planning.

It is not surprising, then, to find new testing laboratories sprouting all over the country, and to see testing methods—and particularly non-destructive ones—occupying a high place on the agenda of technical society meetings. At the Society of Automotive Engineers Summer Meeting, for instance, there were papers on ultrasonic, electrical resistance, magnetic particle and dye penetrant inspection, and radiography—with plenty of new developments to discuss.

Taking radiography as an example, new developments include X-rays in color, crystalline detectors, new and improved X-ray machines (they range in size from 50-pound portables to room-sized Betatrons; in power from 5,000 to over 30 million volts), and new radioisotopes for use as radiation sources.

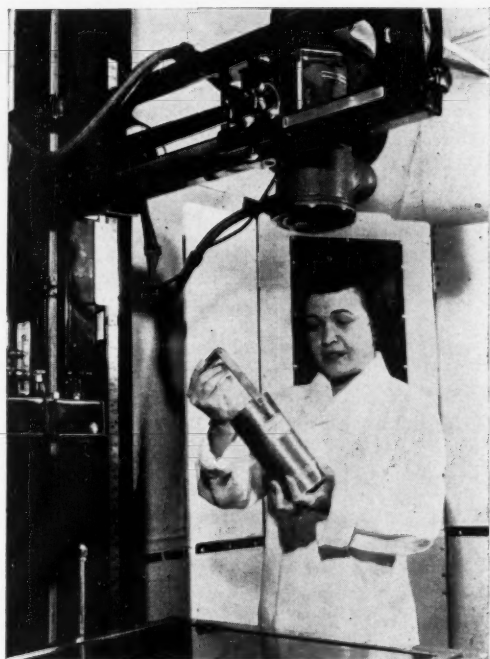
At least four different radioactive isotopes in addition to radium itself can now be had for looking inside castings, studying joint design, checking assemblies, and many other jobs.

New equipment is being designed to take advantage of the isotopes' special qualities. According to Argonne National Laboratory, the thulium isotope used in its newly designed unit (photograph, left) provides radiation comparable in energy to that produced by a 100,000-volt X-ray machine. That's why the unit itself can be so small.

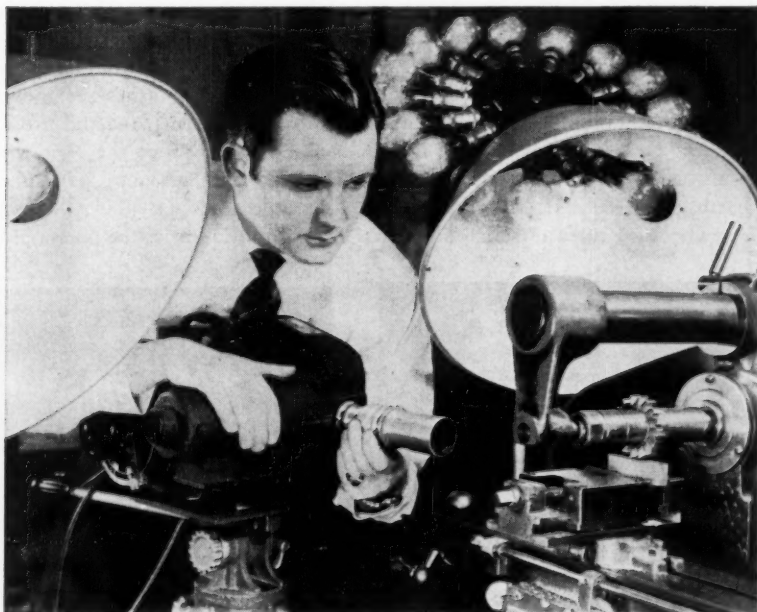
(Thulium, incidentally, is element 69—symbol Tm—one of the rare earths; not to be confused with thallium, Tl, element 81. Thallium is a rare metal, too, and relatively little-used, but it is produced commercially—see *Modern Industry*, May 1951, page 48.)

As James H. Bly of X-Ray Incorporated told the SAE, "The development of radiation sources has been carried so far that the variety available is almost bewildering." But, as he also pointed out, each has its place. When depth of penetration required, cost, safety, and other factors are taken into consideration, the choice is not hard to make.

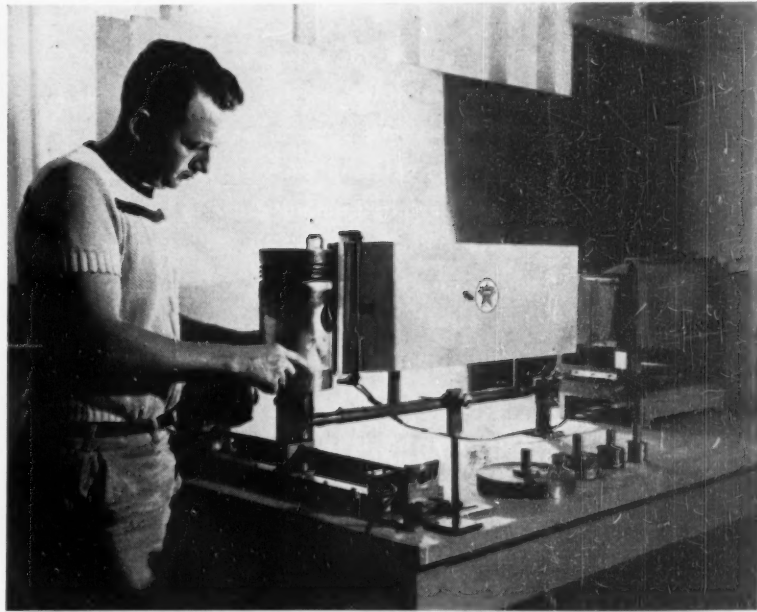
Actually, there is relatively little competition



Powerful thulium isotope permits design of tiny, inexpensive "X-ray machine." Here, Argonne National Laboratory technician compares new device with standard medical X-ray unit.

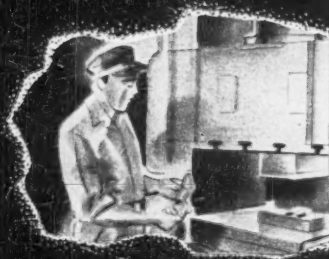


Photography plays a key rôle in many non-destructive tests. This U. S. Steel engineer hunts machinability data with high-speed camera and stroboscope. Similar set-ups may be used to study machine parts in operation.



New mounting device helps Texaco photograph curved piston surface without optical distortion, study detergent action of new Havoline oil. Piston rotates as it moves along track, and picture is taken through slot in box.

H-P-M FASTRVERSE
Single Action Press with or
without Hydraulic Cushion



H-P-Ms for DIE STRAIGHTENING

COINING • SIZING • EMBOSsing

• Versatile, rapid cycling, all-hydraulic
• H-P-M single action presses are ideally suited
• to a wide range of mass production jobs —
• straightening castings, coining,
• sizing, embossing, forming, drawing,
• assembling and many more. Automatic
• controls insure uniform results. Talk to an
• H-P-M engineer today about
• cutting your production costs!



THE HYDRAULIC PRESS MFG. COMPANY
MOUNT GILEAD, OHIO, U.S.A.

3016 Marion Road

A FEW OF THE HUNDREDS OF USERS OF
H-P-M ALL-HYDRAULIC FASTRVERSE PRESSES
Admiral • Allis-Chalmers • American Locomotive
Boeing • Briggs • Budd Wheel • Buick • Douglas
Caterpillar Tractor • Chevrolet • Chrysler • Goodyear
Consolidated Vultee • Curtiss-Wright • Frigidaire

Ford • General Electric • Westinghouse • Goodyear
General Motors • Hot Point • Hughes Tool • Machine
International Harvester • J. I. Case • Western Electric
John Deere • Lockheed • Massey-Harris • Mullins
North American • Oldsmobile • Oliver • U. S. Steel
Pratt & Whitney • Revere Copper & Brass • Savel
Ryan • Thompson Products • U. S. Rubber • Timken

even between the various non-destructive testing methods. Each is best suited to a particular type of job—and all (including such techniques as those pictured here) are worth investigation when products are on trial.

An excellent review of non-destructive testing methods is contained in the 1952 ASTM Edgar Marburg lecture by Robert C. McMaster of Battelle Memorial Institute, copies of which may be purchased from the American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa., for \$1.50. Also obtainable from the ASTM are a comprehensive technical publication (STP 145-1953), priced at \$2, and several other publications.

Sturdy coats from metal powders

A hard tungsten coating applied with a paint brush. . . .

Wear-resistant and heat-resistant surfaces for titanium parts. . . .

A machinable filler and build-up compound for aluminum. . . .

All these are made possible by new combinations of powdered metals and resins.

The tungsten coating, which is said to be self-lubricating as well as hard and tough, combines fine particles of metallic tungsten with a plastic resin and molybdenum disulfide. Known as "Tungstide," it is now being tested on relay-latching members for electronic computers, duplicating machine parts, and plastic dies and fixtures. Lockrey Company, Southampton, N. Y., makes several formulations (air-drying for wood and plastics; heat-curing for metals; and special high-temperature types).

The hard surfacing materials for

titanium, just patented by Metal Hydrides Incorporated, Beverly, Mass., are made by combining—in a volatile liquid—powdered titanium or titanium hydride with finely divided particles of copper, cobalt, nickel, or silver; and carbides or nitrides of chromium, tantalum, titanium, tungsten, or zirconium. Coated parts are heated to the point where the liquid evaporates and the metallic elements melt. Then, says MHI, a diffusion bond is formed between the base metal and the molten elements of the coating, and the hard carbide and nitride particles migrate to the surface.

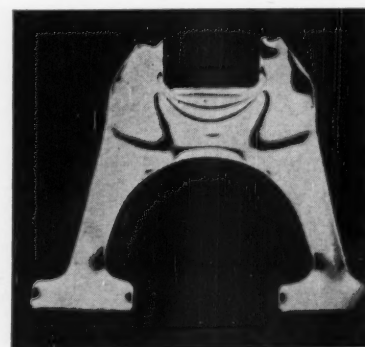
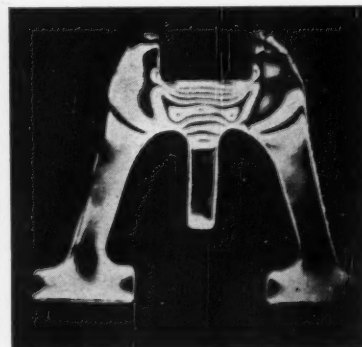
Aluminum powder forms the basis for a finish and filler for sheet metal joints and die surfaces made by Smooth-On Manufacturing Company, Jersey City, N. J. Here, an epoxy resin which hardens by polymerization at room temperature is the binder. Smooth-On claims the compound, "Metalset A-101," forms a stable, machinable surface that will not warp or crack.

Plastics fitted to your plant

No one expects to see an all-plastic plant spewing out all-plastic machines at stroboscope speed. Not soon, anyway.

But, from building exteriors, through piping, duct work, tanks, and filters, and on to the production line, plastics are proving their ability to work with, and often to take over from, metals. Glass-reinforced polyester resins are being used for metal-stamping dies, and other types of plastics are moving into a variety of plant and product jobs. Among these, the rigid vinyl plastics are proving particularly versatile.

An indication of the potential for



Transparent plastic models help Chambersburg Engineering build bigger and better drop hammers. Here, stress patterns of two frame section designs are compared. One at right shows less strain under load, was chosen.

ONE OF A SERIES

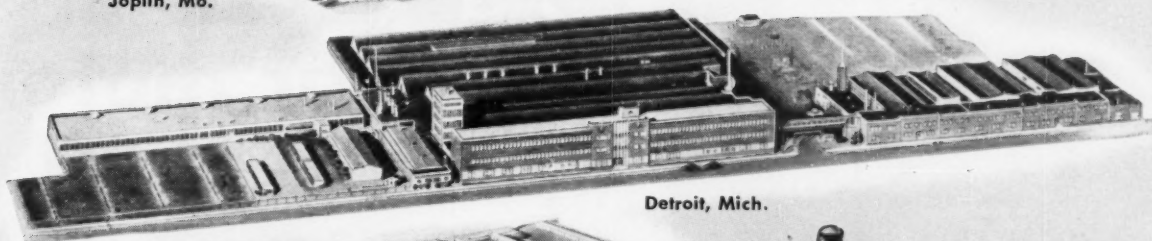
You Get Many Benefits
by Specifying **VICKERS**® Hydraulics



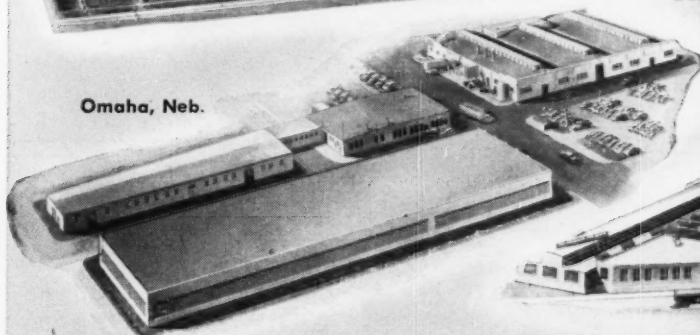
Joplin, Mo.



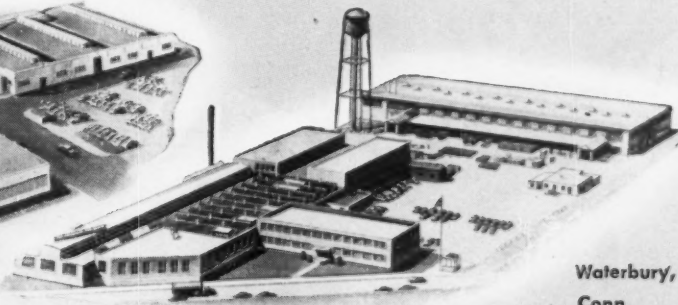
El Segundo, Cal.



Detroit, Mich.



Omaha, Neb.



Waterbury,
Conn.

Unmatched Facilities

For Hydraulics Development, Design,
Manufacturing and Application

In resources for research, design, development, manufacturing and application, Vickers is unmatched in the hydraulics field. The five plants shown above employ more than six thousand people. These plants are strategically located to best serve the diversified industries that use Vickers Hydraulics.

The large scope of these operations makes it economically practicable for Vickers to develop facilities that would be impossible under other

circumstances. As a result, you get more for your money when you buy Vickers Hydraulic Equipment.

VICKERS

Incorporated

DIVISION OF THE SPERRY CORPORATION

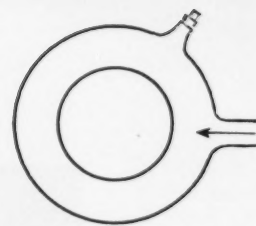
1424 OAKMAN BLVD. • DETROIT 32, MICH.
Application Engineering Offices: ATLANTA • CHICAGO
(Metropolitan) • CINCINNATI • CLEVELAND • DETROIT
HOUSTON • LOS ANGELES (Metropolitan) • NEW YORK
(Metropolitan) • PHILADELPHIA • PITTSBURGH • ROCHESTER
ROCKFORD • SEATTLE • TULSA • WASHINGTON • WORCESTER

6627-R.

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

top management
decides
it is ...

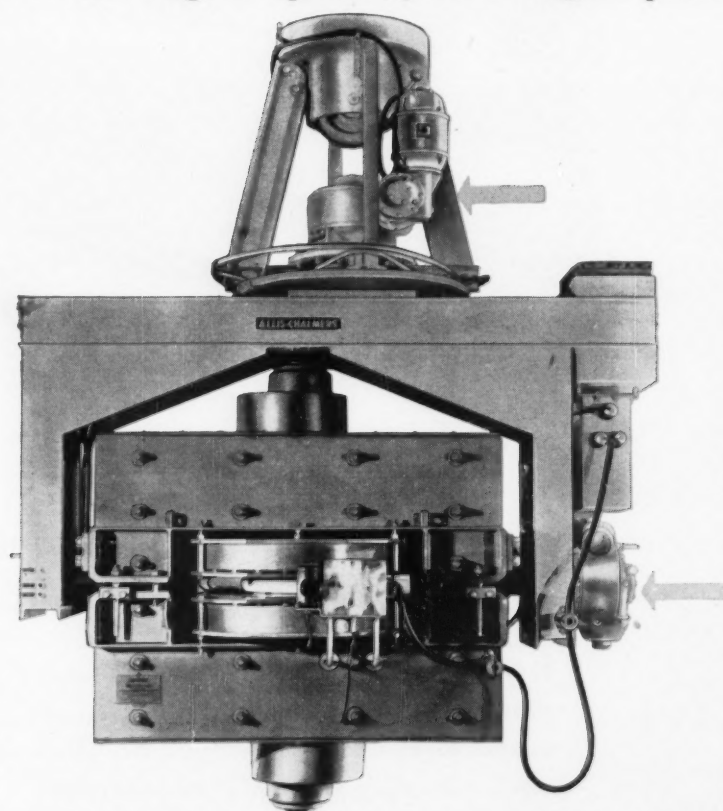
for the Betatron ...



Janette

gear motors

for "the right speed, the right power"



Gear Motors



Speed Reducers



Rotary Converters



Valve Drives



The massive Betatron pictured on this page is a product of Allis-Chalmers Manufacturing Company of Milwaukee, Wisconsin. It produces 24 million electron volts—enough to x-ray up to 20 inches of solid steel. Accurate performance called for "the right speed—the right power."

Since 1932 Allis-Chalmers top management—Engineers, Designers, Purchasing Agents and Executives—have afforded Janette engineers the opportunity to assist in determining the type and design of Gear Motors or Speed Reducers to render the most efficient performance.

That such co-operation has been highly successful is seen in the fact that the inter-

nationally famous Allis-Chalmers organization has purchased many thousands of JANETTE Gear Motors and Speed Reducers.

Every manufacturer has the opportunity to capitalize on JANETTE's nearly one-half century of specialized experience. Each year hundreds of leading firms are adding their names to an ever-increasing list of customers who have found JANETTE performance an asset in the sale of their products.

Consult your Classified telephone directory for the name and address of your nearest JANETTE Representative or write direct for complete information covering JANETTE's new merchandising plan and prices.

Janette Electric Mfg. Co.

Morton Grove, Illinois

Subsidiary, Gerity-Michigan Corp.

rigid vinyl plastic piping and plant equipment is the number of big-name companies that have recently entered the field—among them, many of the major steel-makers. They know plastic piping could be strong competition for their standard products, and prefer “jining” to trying to lick the trend. Rubber manufacturers, too, are in the field with both feet—as producers of the plastics themselves (notably polyvinyl chloride), and as fabricators. (See photograph below, and “Plastics in your Plant,” *Modern Industry*, April 1952, page 50.)

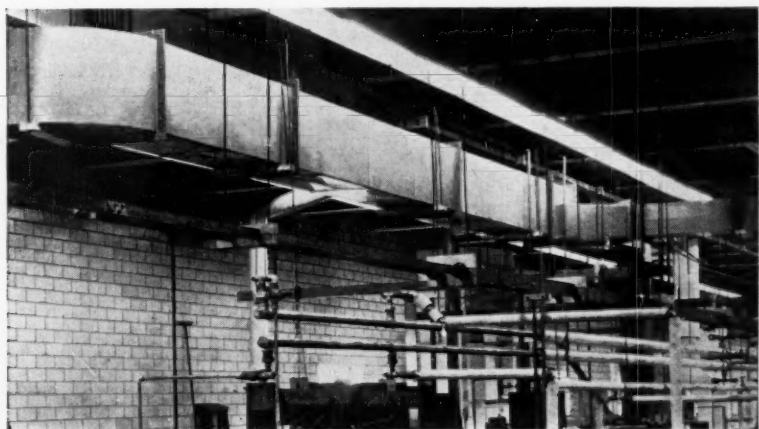
At the same time, plastic-forming techniques are beginning to reach the point where they are adaptable to standard metalworking production lines. At the National Plastics Exposition, for instance, B. F. Goodrich Chemical Company showed an experimental set-up for continuous heating and forming of

its Geon rigid polyvinyl chloride plastic sheeting—to make housings, instrument cases, and other formed parts. As the photograph (below) shows, a standard conveyor belt, far-infra-red heater, and press are joined together in a simple but effective line that might be set up in almost any plant.

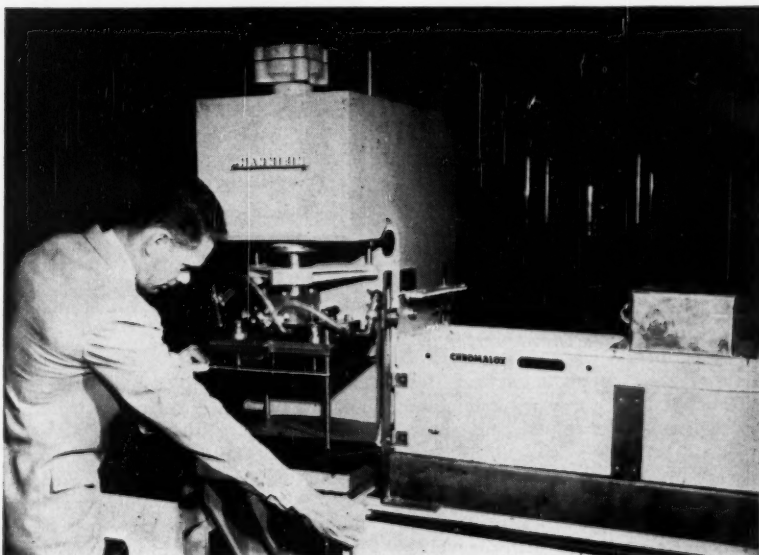
Naturally, it's too much to expect any new material to slide right into an old slot without adjustments or headaches. But rigid plastics are being fitted to a host of plant and product jobs. If you haven't yet explored their possibilities, take a look at them now.

Purer water for process use

Odorless, tasteless, germ-free water for textile dyeing, chemical and drug formulation foods, beverages, and the like, is promised by a novel



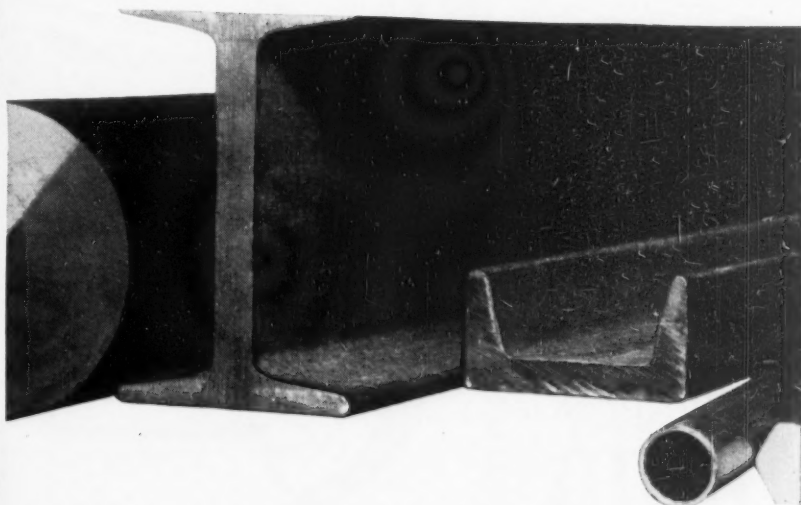
Corrosion resistance of rigid vinyl plastics brings them many plant jobs. These ceiling-mounted Seilon ducts carry acid fumes from plating tanks.



Adaptability of rigid vinyls to mass-production techniques is demonstrated by B. F. Goodrich Chemical. In experimental set-up, sheet, fed from roll, moves under heater, is molded, cut off automatically on ten-second cycle.



call Ryerson for steel carbon, alloy, stainless



Quick delivery from world's largest stocks

Whether you need a single piece or a truckload you can depend on prompt, personal service from your nearby Ryerson plant. So, for every kind of steel—when you need it—call Ryerson.



RYERSON STEEL

Principal products in stock: bars, structurals, plates, sheets, tubing, alloy & stainless steel, reinforcing, etc., also machinery & tools

JOSEPH T. RYERSON & SON, INC. PLANTS AT NEW YORK • PHILADELPHIA • CHARLOTTE, N. C. • BOSTON • CINCINNATI • CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE



Yes; U. P. freight men do get around. They're calling on shippers and receivers of all types of commodities. This means getting close to many transportation situations. It's possible that just yesterday a problem came up that parallels a matter you've been mulling over. Perhaps discussing it with your nearest U. P. representative will help solve your problem . . . help you find a straight road to your objective—just as Union Pacific is the straight direct route across western America.

UNION PACIFIC RAILROAD

(Offices in 70 cities throughout the U. S. A.)

water treatment method now being introduced by Salem-Brosius, Inc., 248 Fourth Avenue, Pittsburgh 22, Pa. Known as the "Hyla Process," it is a catalytic treatment using silver salts to produce water that is not only germ-free, but, says Salem-Brosius, will stay that way for some time after treatment.

Johns Hopkins University scientists who have been studying the Hyla Process for S-B do not expect it to replace chlorination across the boards. As they point out, silver treatment is more expensive, affects only those bacteria containing sulfur-bearing enzymes, and is not effective in saline, acid, highly ammoniated, or oxygen-free waters. But, where the presence of chlorine is undesirable, and when the lasting qualities of the treatment are important, the Hyla Process should be well worth considering.

They've got your number

Slide charts and dial calculators are convenient, useful—and often fascinating. There seems to be no end to the variety that can be devised to aid materials selection, product design, and plant operation. Here are ten new ones—all free on letterhead request.

Cast aluminum alloys: Slide chart shows compositions, physical

and mechanical properties for sand and permanent mold cast alloys. Howard Foundry Company, 1700 North Kostner Avenue, Chicago 39, Ill.

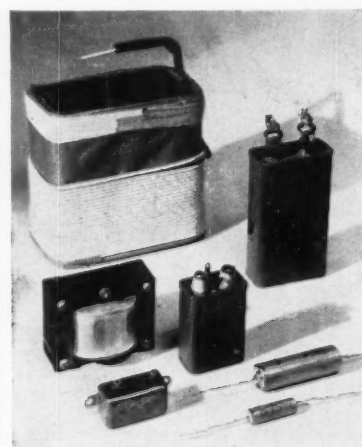
Weight calculator: Slide chart for copper, yellow brass, stainless steel, and aluminum gives direct readings of tube, rod, bar, and sheet weights for standard widths and thicknesses, in lengths up to 1,000 feet; charts conversion factors for many other common copper alloys. Chase Brass & Copper Company, Waterbury 20, Conn.

Steel castings: Slide shows analyses, physical properties of cast stainless and other corrosion resistant alloys. Lebanon Steel Foundry, Lebanon, Pa.

Paneling: Slide chart gives number of strips or pieces which can be obtained from various Presdwood panel cuts. Masonite Corporation, Chicago 2, Ill.

Surface active agents: Double-dial circular calculator is designed to aid formulation of paints, cleaners, cosmetics, lubricants, soldering fluxes, and many other emulsion-type compounds. Industrial Chemicals Department, Atlas Powder Company, Wilmington 99, Del.

Fasteners: Slide chart for use with powder-actuated tools indicates proper size and type of fastener and powder load for wood, metal, and concrete of various thick-



New film makes them better

From evening slippers to solenoid coils Mylar, Du Pont's new polyester film is proving its ability to stand abuse and maintain its good looks at the same time. With a tensile strength, in one mil thickness, of 23,500 pounds per square inch, good electrical properties, excellent resistance to many solvents and inorganic acids, and an ability to stand temperatures well above the boiling point, it is permitting design of smaller, more efficient electrical com-



ponents like those pictured at the left, and the packing of corrosive chemicals—even while still hot—as in the lined drum at the right. In addition, because it can be printed and metallized, it can be made into metallic yarn, evening shoes, and other consumer products. Du Pont has been supplying Mylar in pilot quantities, but expects its new \$10 million plant to be in operation this Summer, making the material freely available for the first time.

GET A *Bigger Share* OF THE RICH MIDWESTERN MARKETS!

Locate Your New Plant in **OUTSTATE MICHIGAN**



...IT FITS INDUSTRY LIKE A GLOVE

**It's Production Land
It's Market Land
It's Vacation Land**

ALL IN ONE!

Here in the heart of the great midwestern market you will find the world's greatest fresh water supply . . . famous industries . . . abundant agriculture . . . skilled labor . . . men and women who lead the nation in home ownership . . . the kind of people who make good employees as well as good citizens and good neighbors.

And here you will find one of the world's great all-season vacation lands.

This is Outstate Michigan. It offers you an industrial climate that spells increased profits.

It takes a specific
location with
proper facilities
TO FIT YOUR NEEDS
Write us
YOUR REQUIREMENTS



**Mr. BUSINESS MAN — Get the facts and you'll agree
HERE'S THE PLACE TO GO PLACES!**

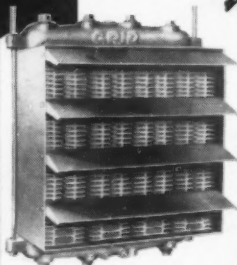
FOR INFORMATION CONTACT
INDUSTRIAL DEVELOPMENT DEPT.

CONSUMERS POWER COMPANY
JACKSON, MICHIGAN

THE NATION'S Leading Industries...

Use GRID Unit Heaters

... and
here's
why...



Maintenance cost conscious management men turn to GRID for relief from the continuous expense of heating failures experienced with ordinary unit heaters. GRID service records

established over years of operation in heavy industry prove GRID installations will provide adequate comfortable heat without constant service care. GRID Units installed in 1929 are still operating today... the only attention needed has been an occasional oiling of the motor. No ordinary unit heater can approach this record.

GRID's All-Cast construction having similar metals in contact with steam prevents electrolytic corrosion — GRID's ability to withstand steam pressures up to 250# P.S.I. — GRID's low outlet temperatures, proper fan sizes and motor speeds assure delivery of warm comfortable air in ample volume, directly to the spot where it is needed. These are the reasons why the nation's leading industries use GRID.

Get the full story — Write today.

ABBOTT LABORATORIES ALLEGHENY LUDLUM
LOUIS ALLIS CO.
AMERICAN BRASS CO. AMERICAN CHAIN & CABLE
AMERICAN CYANAMID
AMERICAN STEEL & WIRE CO. ARMCO STEEL CORP.
ANACONDA COPPER MINING CO. ARMOUR & CO.
ANSUL CHEMICAL CO.
S & O R.R.
A.T. & S.F.R.R. CO.
ARMSTRONG CORK CO.
CASTP&P R.R. SENDIX CORP.
BEATRICE FOODS NEW YORK CENTRAL R.R.
BENZOL PRODUCTS
CANADIAN PACIFIC R.W.Y. CO.
KRAFT FOODS
CHAIN BELT CO.
CHESAPEAKE & OHIO R.R.
MAINE CENTRAL R.R. CO.
CHICAGO NORTH WESTERN R.R. CO.
CHRYSLER CORP. CLIFFS DOW CHEMICAL CO.
MARATHON CORPORATION
COLUMBIA SOUTHERN CHEMICAL CORP.
NATIONAL CONTAINER
CONSOLIDATED WATER POWER & PAPER CO.
CONSOLIDATED MINING & SMELTING CO., LTD.
FORD MOTOR CO. DIAMOND ALKALI CO.
MONSANTO CHEMICAL CO.
DOW CHEMICAL CO. E. I. DUPONT de NEMOURS INC. ELECTRIC AUTO LITE CO.
JOHNS-MANVILLE HERCULES POWDER
EVERETT PULP & PAPER CO. GREAT NORTHERN RAILWAY KELSEY HAYES WHEEL
GENERAL MOTORS JONES & LAUGHLIN U. S. RUBBER CO.
GENERAL ANILINE & HARSHAW CHEMICAL CO. MASONITE CORP.
GENERAL CHEMICAL DIV. ALLIED CHEM. & DYE CORP. GEO. A. HORMEL CO.
GOODYEAR HOFFMANN L&ROCHE INC. INTERNATIONAL HARVESTER
GENERAL FOODS CORPORATION MERCK & CO., INC.
GENERAL ELECTRIC CO. HOOKER ELECTRO-CHEMICAL CO. MINN. & ST. LOUIS R. R. CO.
INLAND STEEL MATHIESON CHEMICAL CORP. NATIONAL LEAD CO.
ILLINOIS CENTRAL R.R. CO. NAUGATUCK CHEMICAL
MINNESOTA MINING & MFG. CO. NATIONAL ANILINE
PENICK & FORD LTD. SHARPLES CHEMICALS
STAUFFER CHEMICAL
B. F. GOODRICH SINCLAIR REFINING CO. A. O. SMITH CORPORATION
NORTHERN PACIFIC R.R. CO. STANDARD OIL CO.
CARNegie ILLINOIS STEEL CO. WEST VIRGINIA PULP & PAPER CO. UNITED STATES STEEL
BUCKEYE COTTON OIL CO. DAVISON CHEMICAL CORP.
VICTOR CHEMICAL WORKS BORDON CO. WESTINGHOUSE
CELOTEX CORP. BETHLEHEM STEEL CORP.
WHEELING STEEL CORPORATION WILLPUTTE COKE OVEN DIV.
SWIFT & CO. UNITED ELECTRIC COAL CO.
CUDAHY PACKING CO.
WASHINGTON TERMINAL CO.
YOUNGSTOWN SHEET & TUBE CO.
UNION CARBIDE & CARBON

D. J. MURRAY MANUFACTURING CO.
Manufacturers Since 1883 • Wausau, Wisconsin

Representatives in all principal cities.

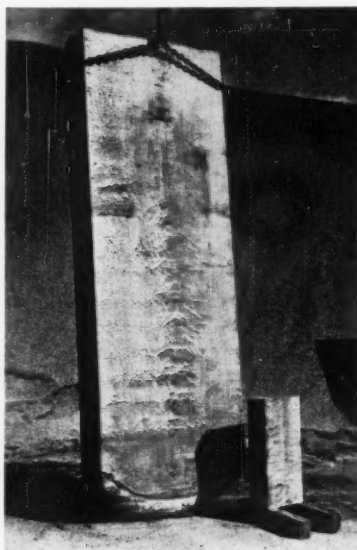
nesses. Ramset Fasteners, Inc., 12117 Berea Road, Cleveland 11, Ohio.

Valves: Arrangements and settings for multiport valves are diagrammed and demonstrated by movable dials on plastic chart. Meter and Valve Division, Rockwell Manufacturing Company, Pittsburgh 8, Pa.

Milling: Slide chart suggests speeds and feeds for cutters 1/8 to six inches in diameter, as used on standard ferrous and non-ferrous metals. Clarkson, Inc., 320 Ontario Street, Toledo 2, Ohio.

Tank capacities: Slide indicates capacity in gallons for various depths of round tanks 1 1/2 to 30 feet in diameter; rectangular tanks two to 20 feet long, two to six feet wide. Hauser-Stander Tank Company, Cincinnati 32, Ohio.

Floor cleaning: Dial indicator tells which type of cleaning compound to use, what coverage to expect, and how long to allow for drying, on concrete, terrazzo, wood, linoleum, rubber and asphalt tile floors. Multi-Clean Products, 2277 Ford Parkway, St. Paul 1, Minn.



Magnesium: growing up

The opening of Dow Chemical Company's big new rolling mill at Madison, Ill., should spur rapid expansion of this light metal's use. Until now, the little 150-pound ingot shown in the foreground was the largest that could be handled on any mill in the country. But, an 84-inch reversing hot mill installed in the new plant can accommodate ingots up to 2,000 pounds in size. That means more sheet material can be produced and bigger parts can be made. Coupled with recent developments in fabrication and finishing, it shows magnesium is growing up—ready to take its place as a major industrial material.

the FOCAL POINT

of technical progress
in the packaging
and materials handling
fields

9th annual National Industrial Packaging and Materials Handling Exposition

● Unique exhibit of products, equipment and materials

● Short Course Educational Program (sponsored by Dept. of Mech. Eng., Univ. of Illinois)

● National Packaging and Materials Handling Competition

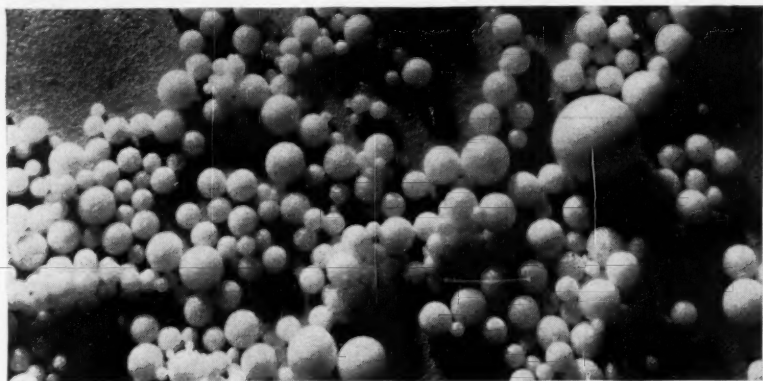
Plan now to attend
CHICAGO COLISEUM
SEPT. 28, 29, 30—1954

Produced by
**SOCIETY OF INDUSTRIAL
PACKAGING and MATERIALS
HANDLING ENGINEERS**
111 W. Jackson Blvd., Chicago 4, Ill.

New formable foam

Tiny polystyrene plastic "pearls" that expand when heated, and will stick together under moderate pressure to form lightweight molded parts, are expanding the usefulness of this attractive material. Developed by Koppers Company, Pittsburgh, Pa., the new foam is machinable and glueable and has a low

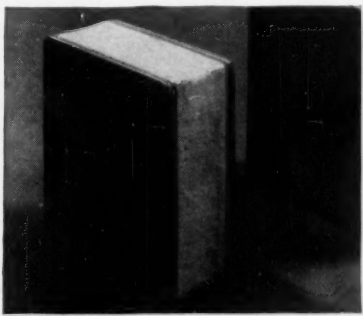
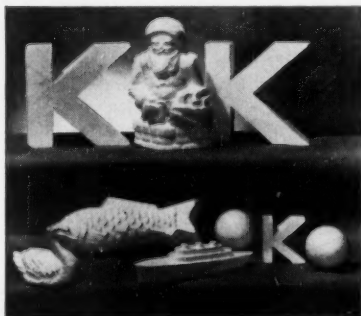
moisture absorption (owing to its closed-cell structure). The protective "skin" formed on the outer surface helps molded parts resist crushing and scoring. Until now polystyrene foam has been obtainable only in pre-expanded logs or blocks which had to be cut to shape (see November 1953, page 54).



Allowed to expand freely, foamed polystyrene "pearls" look like this. When expanded in mold, granules stick together to form cohesive structure.



Molding equipment need not be expensive. Koppers uses this simple press to form expanded polystyrene boat. Steam or hot air can be used for heating.



Suggested applications for new foam range from decorative items (left) to structural sandwiches (right). It has good dielectric properties, too.

Creative Selling Begins with Uncluttered Minds

HEINN Custom-Styled Catalogs

Do Your Salesmen's "Remembering"



Freed of cluttering detail, a salesman's mind is likely to be a clear one. Such a mind can concentrate on creative selling—a new sales argument, a new idea for a customer, a special service that leads to *extra* volume.

That's why it's important to let Heinn custom-styled catalogs and manuals do your salesmen's "remembering." All selling material stays up to date and in sequence, and Heinn-planned indexing helps salesmen find the right answers in three seconds. They begin to make sales quotas!

Thousands of companies now enjoy Heinn service. They could tell you about sales increases, lowered sales costs, reduced sales correspondence, savings on print jobs, and better impressions on their trade. Some of these contented customers now rely on the Heinn home office for help in planning catalog content.



He'd find facts in three seconds with Heinn indexing.

Let Heinn supply your celluloid indexes.

Originators of the Loose-Leaf System of Cataloging. Leaders in 1896 . . . and Still Leaders



Representatives in Principal Cities

THE HEINN COMPANY
310 W. FLORIDA ST.
MILWAUKEE 4, WIS.

Please give us facts about binders and indexes for:

PROBABLE QUANTITY

Include information on:

PROBABLE QUANTITY

☐ SERVICE, INSTRUCTION, PROCEDURE MANUALS

☐ SAMPLE CASES

☐ SALES MANUALS

☐ SALESMEN'S CASES

☐ PRICE BOOKS

☐ EASEL PRESENTATIONS

☐ PARTS BOOKS

☐ ACETATE ENVELOPES

☐ CATALOGS

☐ SPECIAL SELLING TOOLS

☐ MERCHANDISING KITS

☐ PROPOSAL SHEETS

☐ Have your representative call.

NAME

TITLE

FIRM

ADDRESS

CITY, STATE

CASE STUDY

Breaking Into a New Market?



Before breaking into the appliance and heating control business with a full product line (above), GE planned for months and found that . . .

JAMES K. BLAKE
Marketing Editor

HERE ARE THE

WHAT do you have to know before you break into a new market? What modifications of your present product will be required? How can you estimate unit sales and dollar volume? What facilities will have to be expanded, which tools redesigned? How much new financing will you want? Can you use the same distribution channels, the same sales techniques? How about advertising—rifle or buck-shot approach?

There are two ways to answer these questions—the easy way and the hard way. The easy way takes a minimum of planning, relies on the intrinsic worth of the product to fill up holes as they develop. The hard way takes planning, research, scheduling . . . and patience.

If you are planning to enter a new market, here are some of the bases you should cover. The planning pattern is that used by the new General Electric Appliance Controls Department in Morrison, Ill. The only unique feature about it is its thoroughness. There is little drama and little excitement . . . until you notice the incredibly short time lapse between the original concept and the initial marketing phase.

The Morrison operation is a direct result of the well-publicized company program of operating autonomy. Appliance controls had been produced by GE for some time for their own use in a number of plants and a small fraction of total sales were made through commercial channels. In late 1951 it looked to GE management as though it would be smart to centralize controls production in a small satellite plant in Morrison, Ill., which had been operating in low gear and was being managed from Schenectady. But the big question was: Is there enough of a market to justify a large-scale break-through

into the commercial appliance control business?

Research made available figures showing that by 1962 dishwasher sales would increase 375 per cent, electric driers and garbage disposers would jump 400 per cent, dehumidifiers would increase 450 per cent, and home air-conditioning systems would boom 4,900 per cent. And the figures on obsolescence looked good, too. The refrigerator market was saturated about 89 per cent. Manufacturers were prodding sales by promoting automaticity—which means more controls.

The market was obviously there, but the next question was: What could GE do about it? Here are the main elements of their planning.

First they established the rough scope of the new business. It seemed to fall naturally into four main categories: Refrigeration controls, heating and air-conditioning controls, controls and timers for other major appliances, and special-purpose controls. Then, they set up a theoretical organization chart and within 60 days began to fill it out by hiring key personnel.

Meanwhile, a number of studies were going on simultaneously. Bits and pieces of product lines that had been manufactured in a number of widely separated departments and divisions were carefully analyzed. Some items were outmoded, some overpriced, and a few were frankly uncompetitive. The other operations were glad to unload them.

Marketing studies were launched on each of the four major product categories. Take refrigerators as an example. One study analyzed the manufacturers in terms of capacity. Standard statistics were compiled on current sales and projected through 1960 for each manufacturer based on external data and individual manufacturer's estimates. Then the total market was

projected with percentage distribution shares for each refrigerator manufacturer—the new Appliance Control Department's potential customers.

Co-ordinated with that were studies of refrigeration control devices, each product projected to the 1960's on the basis of estimated demand. Included were analyses of components, costs, and totals in terms of units and price.

Market Research also began studying published data about existing competitors to check on the relative share of the current market going to each.

Meanwhile, other groups were in the field contacting refrigerator manufacturers. Their object was to discover what was coming in the way of new design. Another important mission was to evaluate manufacturers' opinions of existing GE appliance controls and to uncover those that must be redesigned.

As these studies were developing on each of the four product lines, management began to evaluate the entire existing product line with an eye to new products, and the most profitable ones were planned in first.

Condensed into outline form for easy reading, the types of research required for each product line would look like this:

I. Marketing (to give information on the following).

1. *Specifications of the product* (may include size, mounting, life, special features, and so on).
- (a) Features and modifications required by customers.
- (b) Required manufacturing cost, sales price, gross margin.



Design engineer and model shop foreman check hand-made product which has developed from preliminary sketches. These, in turn, based on engineering and market research, were carefully appraised by sales specialists.



Planning section, with production date roughly determined and capacity estimated until 1960, works out tool design schedules, material flows, and begins drafting complete layout of all plant manufacturing facilities.

HEADS YOU HAVE TO PUT TOGETHER



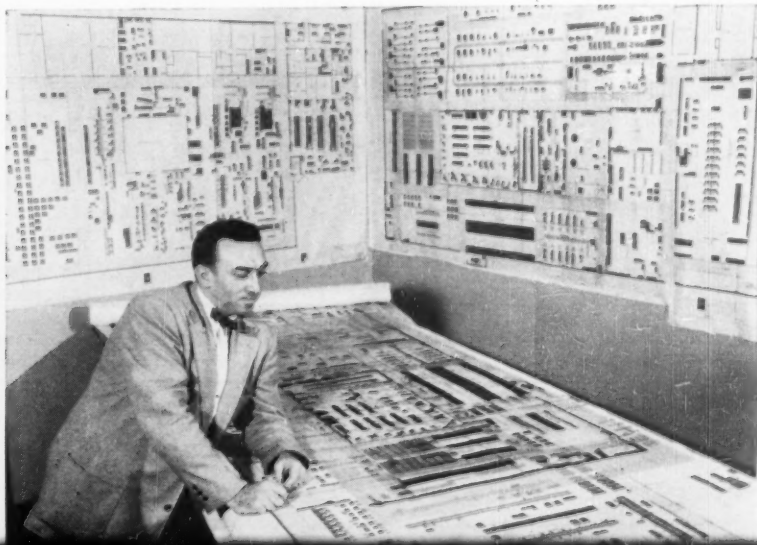
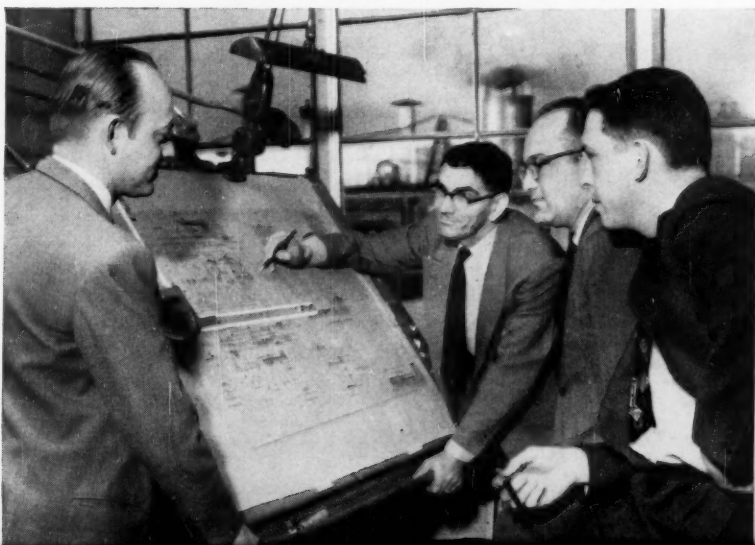
ABOVE Engineering Development Schedule involves product planning based on extensive market studies. The meeting brings together top brass—finance, production, planning, manufacturing, marketing, and personnel.



ABOVE Dealers had to be convinced that controls were not overengineered, as much of the trade had believed, before manufacturers would buy them. GE proved it in nation-wide, take-apart sessions with over 7,000 dealers.

BELOW Customers, original equipment manufacturers, were invited to plant to discuss their own requirements. All products had to be mass produced, yet flexible enough to adapt to individual engineering and style spec's.

BELOW Three blueprints illustrate integrated planning. Left on wall is original layout. On right wall is print of nearly complete expansion. Overlay on table shows next growth step based on estimated 1960 demand.



Schedule Before You Leap

From rough sketches to full production, every step of application and design was carefully planned in sequence to dovetail with market studies described in text.

Schedule shown here could apply to most companies entering a new market

or planning in a new product. In the GE Appliance Control Department, liaison between engineering, production, and sales during product development is the responsibility of the manager of product planning who reports directly to the marketing manager.

PARTS AND SCHEDULED STEPS	BEGIN	COMPLETE	RESPONSIBILITY
PART A—Design & Planning			
1. Exploratory DA			Engineering
2. Sketch Drawings			Drafting
(a) Sketch Drawings to Sales			Drafting
3. Make Hand-made Samples			Model Shop
(a) Hand-made Samples to Sales			Model Shop
4. Test Hand-made Samples			Lab. Test
5. Preliminary Planning & Round Table Cost			Engineering
6. Preliminary Management Review			Engineering
7. Issue Inspected Drawings, SI's, & CEM			Engineering
8. Packaging, Labels, Instruction Book			Engineering & Sales
9. Renewal Parts Data			Engineering
10. Final Planning			Planning & Methods
11. Final Cost			Cost
12. Management Review & Release			Management Comm.
13. Tooling DA			Engineering
14. Plant Appropriation Request			Manufacturing Engr.
PART B—Tooling & Production			
1. Field Trial Run (— Units)			Manufacturing
2. Prints & Requests to Tool Mfg.			Planning
3. Tool & Equipment Drafting			
(a) Die Drafting			Tool Manufacturing
(b) Jig & Fixture Drafting			Tool Manufacturing
(c) Mfg. Equipment Drafting			Tool Manufacturing
(d) Test Equipment Drafting			Tool Manufacturing
(e) Gage Drafting			Tool Mfg. & Inspect.
4. Approve Tool Orders			Engineering
5. Tool & Equipment Making			
(a) Dies			Tool Manufacturing
(b) Molds			Tool Manufacturing
(c) Other Tools & Fixtures			Tool Manufacturing
(d) Mfg. Equipment			Tool Manufacturing
(e) Test Equipment			Tool Manufacturing
(f) Gages			Tool Mfg. & Inspect.
6. Sample Material			Production
7. Sample Checking, Tool Rev. & Approval			Inspection
8. Sales Forecast			Marketing
9. Raw Material & Purchased Parts			Production
10. Tool-made Parts			Production
11. Assembly Tool & Equip. Revision			Tool Manufacturing
12. Tool-made Samples			
(a) — Units for Lab. Test			Planning
(b) — Units for Pilot Run			Planning
13. Lab. Test of Samples			Lab. Test
14. Pre-Prod. Rel. Run (— Units)			Manufacturing
15. Prod. Release Meeting			Engineering

DA: Development Authorization
SI: Standard Engineering Instructions

CEM: Cost Estimate forms giving estimated expense of each manufacturing operation

- (c) When required.
2. *Market potential.*
- (a) New or established market.
- (b) Estimated industry unit and dollar sales to 19XX.
- (c) Estimated factory unit and dollar sales to 19XX.
- (d) Potential customers.
- (e) Internal/external sales.
- (f) Closed markets.
3. *Pricing situation* (what is required to be competitive).
4. *Sales methods.*
5. *Distribution.*
6. *Design, production, and sales promotion schedule.*

II. Financial.

1. *Investment required.*
- (a) Engineering.
- (b) Tools.
- (c) Marketing expense.
2. *Profit.*
- (a) Manufacturing cost.
- (b) Proposed selling price.
- (c) Established gross margin.

III. Competition by companies.

1. *Sales price.*
2. *Percentage of market.*
3. *Advantages.*
4. *Disadvantages.*
5. *Modifications.*

IV. Engineering.

1. *New product—specifications.*
2. *Design contribution* (major, minor, none).
3. *Features.*
4. *Patent situation.*
5. *Engineering man-hours required.*

V. Manufacturing.

1. *Manufacturing load.*
2. *Equipment required.*
3. *Number of forms.*
4. *Time required to put into production.*

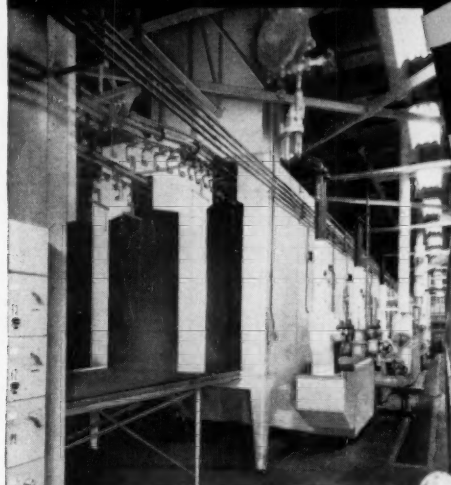
While these were being processed and evaluated, marketing and advertising began to realize they had a tough job on their hands. Hardly anyone knew that GE was in the control business, beyond manufacturing for their own products. The situation was particularly acute in the heating industry.

Heating equipment manufacturers were mildly sympathetic to the idea of a new control supplier—the GE reputation helped considerably—but they told marketing management frankly that they wouldn't touch a control unless the dealers and servicemen gave the OK signal. So sales specialists began to sound out the trade. Here they found their biggest stumbling block. The trade either didn't know that a full line of controls was available or, if they did realize it, thought the controls were overengineered.

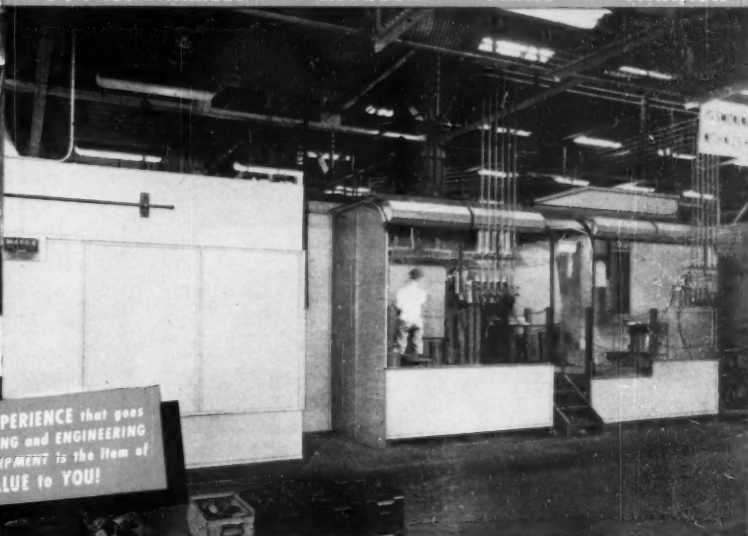
The original equipment manufacturers had

COMPLETE *Finishing* SYSTEMS

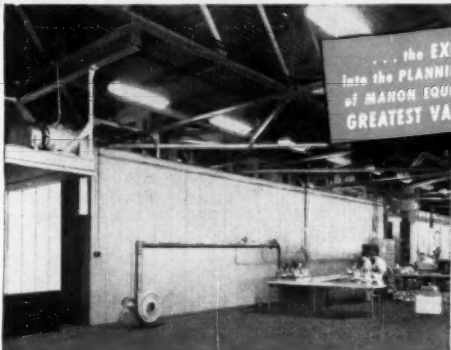
... for ENAMELS • LACQUER • PAINT • VARNISH



Exit end of Mahon Five-Stage Metal Cleaning and Rust Proofing Machine. Note two parallel conveyor lines pass through this unit.



Mahon Hydro-Filter Spray Booths with modern "HYDRAIRE" Flood Sheets are staggered right and left hand to permit spraying on opposite sides of parts without turning.



Mahon Dry-Off Oven and entrance end of Mahon Cooling Tunnel which reduces time-length between Oven and Spray Booths.



The Mahon Direct Gas-Fired Finish Baking Oven in this installation is located overhead to permit 100% use of floor space below.

... the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!

More RESIDENTIAL HEATING UNITS Receive Their FINE FINISH in a COMPLETE MAHON FINISHING SYSTEM!

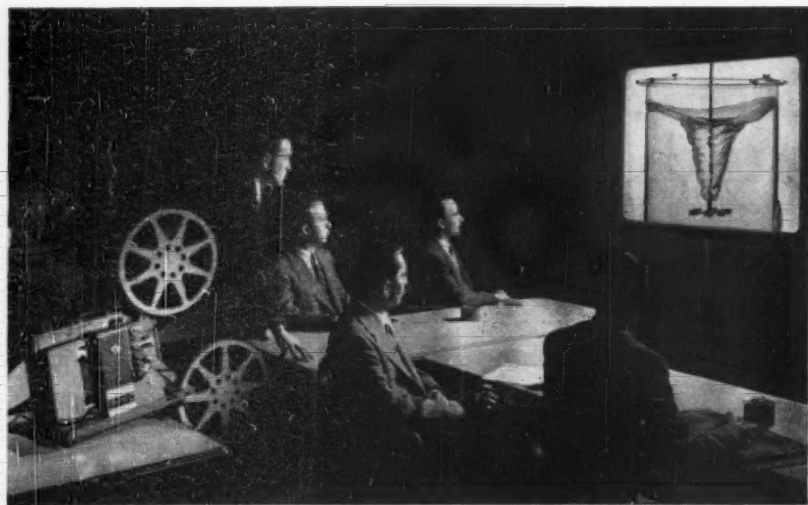
Here is another Complete Mahon Finishing System designed, built and installed to produce specific results on a particular product. The system is ultra-modern in every respect . . . it includes a two-conveyor line five-stage Metal Cleaning and Rust Proofing Machine, a Dry-Off Oven, a Cooling Tunnel, two Hydro-Filter Spray Booths, and an overhead Finish Baking Oven which permits use of the floor space below. Direct Gas-Fired Units provide the heat for both Dry-Off and Finish Baking Ovens. Temperature control is automatic throughout. If you have a finishing problem, or are contemplating new finishing equipment, you, like many other alert manufacturers, will find that Mahon engineers are better qualified to advise you on both methods and equipment requirements . . . and better qualified to do the all-important planning, coordinating and engineering of equipment—which is the key to fine finishes at minimum cost. You will also find that Mahon equipment is built better for more economical operation over a longer period of time—this is an important factor which should be carefully considered when comparing initial cost figures. Mahon's thirty-two years of experience in this highly specialized field covers thousands of Complete Finishing Systems including Dip, Flow Coating, and Spray Equipment for every conceivable product painted on a production basis. See Sweet's Plant Engineering File for complete information, or write for Catalog A-654.

THE R. C. MAHON COMPANY

HOME OFFICE and PLANT, Detroit 34, Mich. • WESTERN SALES DIVISION, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning, Pickling, and Rust Proofing Equipment, Hydro-Filter Spray Booths, Dip and Flow Coaters, Filtered Air Supply Systems and Drying and Baking Ovens, Cooling Tunnels, Heat Treating and Quenching Equipment for Aluminum and Magnesium, and other Units of Special Production Equipment.

MAHON



How movies lighten the load for Lightnin® Mixer salesmen

When you sell heavy equipment like an industrial mixing machine, you can't carry the product around in your brief case. In the case of LIGHTNIN MIXERS, some of which weigh a ton or more, selling problems are further complicated because every mixer is made to solve a specific fluid-mixing problem. Selling the engineering principles involved is a prerequisite to selling the equipment itself.

So the Mixing Equipment Company, makers of LIGHTNIN MIXERS, let movies do the demonstrating. Their 16mm. film, "Fluid Mixing," dramatizes—in color and sound—the efficiency of modern mixer design.

"THE BIGGEST BENEFIT from our movie program," a Mixing Equipment representative says, "is that all important buying influences in a customer company can be concentrated in a single presentation. One recent showing, for example, pulled in an audience of 250 engineers. That's a lot of buying influence. And it represents a tremendous saving in selling costs, too."

Kodascope Pageant Sound Projectors are used by company representatives to show the film. They like Pageants because maintenance problems in the field are eliminated by the exclusive pre-lubrication feature. They find Pageants are easy to set up and operate, too. And the projector's amazingly faithful sound reproduction is mighty important when showing the film to large audiences.

For dramatic selling that's convenient, economical, and effective, use movies shown with

16mm. Pageant Projectors. Ask your Kodak Audio-Visual Dealer for a free demonstration or mail the coupon for full details.

Movies help keep people on the move ...in UNITED MAINLINERS



To interest travelers in seeing California by air, United Airlines recently made a 16mm. Kodachrome movie, "A World in a Week—California."

It's an unusual movie with a built-in birdman's-eye view. Many unique shots in the film were taken by two remote-controlled 16mm. Cine-Kodak Special II Cameras mounted in aluminum boxes outside the plane.

During the past few months, the film has been shown to hundreds of schools, clubs, and travel-minded groups. Already United has noticed an increase in bookings.

This is the sixth traffic-boosting United Airlines film to be made with Cine-Kodak Special II Cameras. Perhaps you, too, have a selling or public-relations story that can be told more effectively in movies.

also demanded a network of distributors to serve as exchange points for the controls, but potential distributors indicated that they would be inclined to look the other way unless their dealers liked the controls.

The top marketing staff knew that to make their schedule (see page 78) they had to convince the trade fast. Here's how they did it.

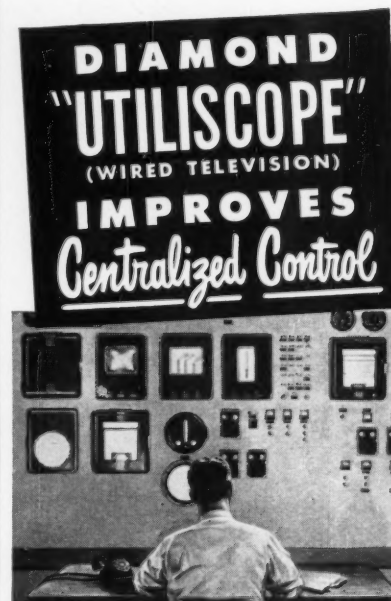
An eight-page ad introduced the control to the trade, followed up by educational two-page ads in selective media. A decision was made to subordinate individual products in these early ads to an over-all, industry-wide approach. When a specific product ad appeared this slug was always in it: "The Appliance Control Department is devoted exclusively to developing and producing complete control for the appliance and home heating industries." The idea was to establish as quickly as possible that the Department was a center of control progress. A series of "Designers Digest" ads in a vertical trade publication helped to consolidate an over-all industry approach.

But it was fully recognized that advertising, in this instance, would create interest and awareness, but not the acceptance that manufacturers demanded. The only way to build acceptance was to get out and familiarize the servicemen in some way with the new control.

The answer the marketing department came up with was the GE Bandwagon. The heating trade was familiar with the itinerant service school and there was nothing new about the technique. GE, however, tricked it out with colorful staging, a 20-minute motion picture selling the quality story, models, prizes, and—the real meat in the Bandwagon from the marketing angle—a thorough product take-apart session emphasizing a quality dear to every serviceman—simplicity. About 7,000 members of the trade were reached personally and the pay-off was that 95 per cent expressed willingness in writing to accept the controls on future installations.

With this proof in hand there was little difficulty in franchising distributors and a mailing program began immediately directed to the heating manufacturers, telling the story of dealer acceptance. The new market was cracked.

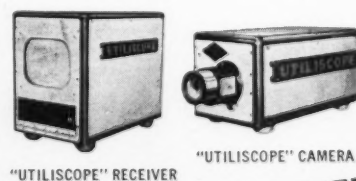
THE END



Operator in central control room of large power station "SEES WHERE HE CAN'T LOOK". Here he watches flame conditions in boiler furnace, stack smoke discharge, and water level in boiler on "Utiliscope" screens of control panel.

Centralized control is much more effective if it brings a SENSE OF REALISM into the control room ... if the operator can actually see what is going on outside his range of vision instead of depending upon indirect interpretations of operating conditions. The electric power industry has accepted the "Utiliscope" as an important factor in achieving better centralized control (as shown above).

The "Utiliscope" has many other uses in industry where its low cost is quickly amortized by improved operation, greater safety or savings in labor. It is surprisingly simple and requires no special skill for installation and operation. Stability and reliability are exceptional. For additional information use coupon below.



DIAMOND POWER SPECIALTY CORP. DR
LANCASTER, OHIO

Please send me without obligation a copy of new Bulletin No. 1136 showing how the Diamond "Utiliscope" (Wired Television) is being used to cut costs, improve operations and promote safety.

Name _____
Company _____
Address _____

DIAMOND POWER SPECIALTY CORP.
FIRST IN INDUSTRIAL TELEVISION
LANCASTER, OHIO
OFFICES IN 39 PRINCIPAL CITIES
Diamond Specialty Limited — Windsor, Ontario
Since 1903, Diamond has Manufactured
Quality Equipment for Industry

EASTMAN KODAK COMPANY, Dept. 8-V, Rochester 4, N. Y.

Please send me the name of the nearest Kodak Audio-Visual Dealer and complete information on equipment checked:

☐ Kodascope 16mm. Pageant Sound Projectors ☐ Cine-Kodak Special II Camera

NAME _____ POSITION _____

COMPANY _____

STREET _____

CITY _____ STATE _____

(Zone)

Kodak

8-4

Here and There in Business

WHAT'S NEW

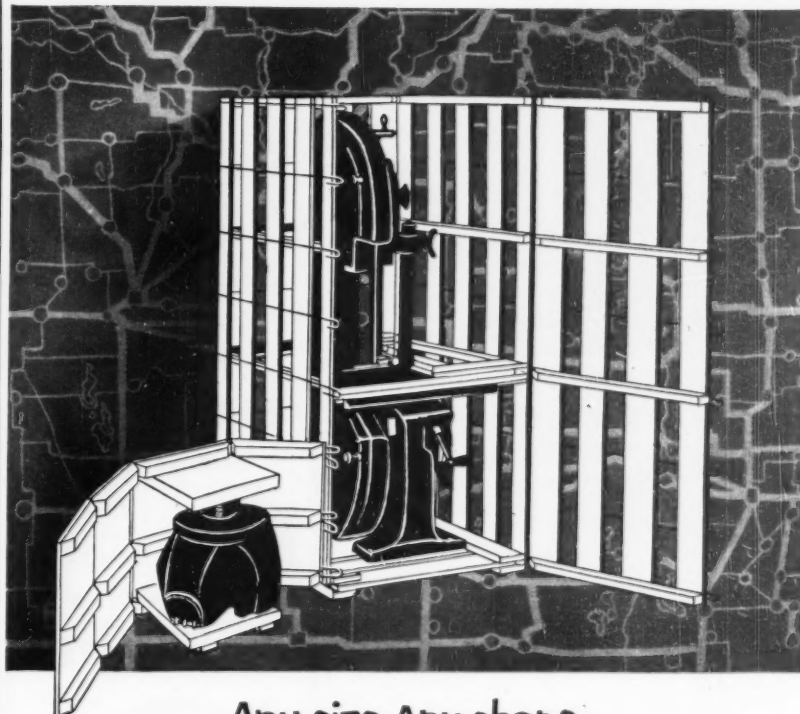
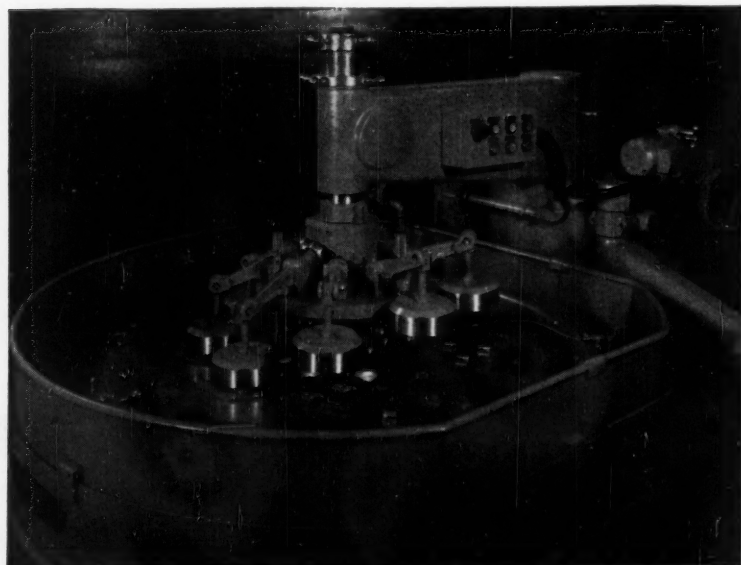
AS OBSERVED BY THE EDITORS

Operation T-1 they called it—and it was an impressive demonstration of what steel can do. This was the name U. S. Steel Corporation and Chicago Bridge & Iron Company gave to their full-dress pressure vessel tests at the CB&I Birmingham plant a month ago. Designed to prove the fitness of quenched and tempered steel plate—specifically, U. S. Steel's *Carillo T-1*—of pressure vessels, and to show that certain specifications may be modified, the demonstrations involved testing-to-destruction of a series of pressure vessels built by CB&I. The test results, and the impressive booklet prepared to help viewers record and study them, are well worth the attention both of potential users and of suppliers of other materials.

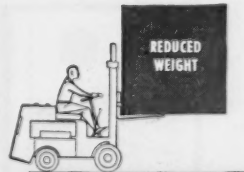
Faster, smoother finishing of metal parts is promised by this new, single-face flat lapping machine. It has a semi-automatic feed, uses bonded abrasive laps, and operates continuously except when laps are

being trued. Even this interruption is speeded by making the truing device adjustable and providing an opening in the work holder that makes it possible to true the lap while the holder is in place. The standard model pictured here is designed for loading and unloading by an operator, but Norton Company, Worcester, Mass., which makes the machine ("Hydrolap No. 36-F") says it is adaptable for fully automatic loading and unloading.

Volatile corrosion inhibitors have made a real place for themselves in industry—protecting everything from tools to engines. They're used in formulating hydraulic fluids and protective paints; and as impregnants for wrapping papers. And powdered crystals are available for spray-gun application as in the photograph, page 82, top. But, until now, the individual user has been neglected. Only recently has the liquid form become available in small-size aerosol cans (see September 1953, page 56), and



Any size, Any shape
No matter where it's bound
SHIP IT WIREBOUND!



There is practically no limit to what you can ship in a Wirebound... for Wirebound is a most versatile container. Wirebounds combine the strength of steel wire with the resiliency of wood in limitless combinations. For example, look at the rock bit box on the left. This small, rugged Wirebound eliminated previous stacking failure and in-transit damage losses. So did the Wirebound band saw crate on the right. For greater safety and greater savings, investigate Wirebounds... today!

MAIL THIS COUPON NOW!

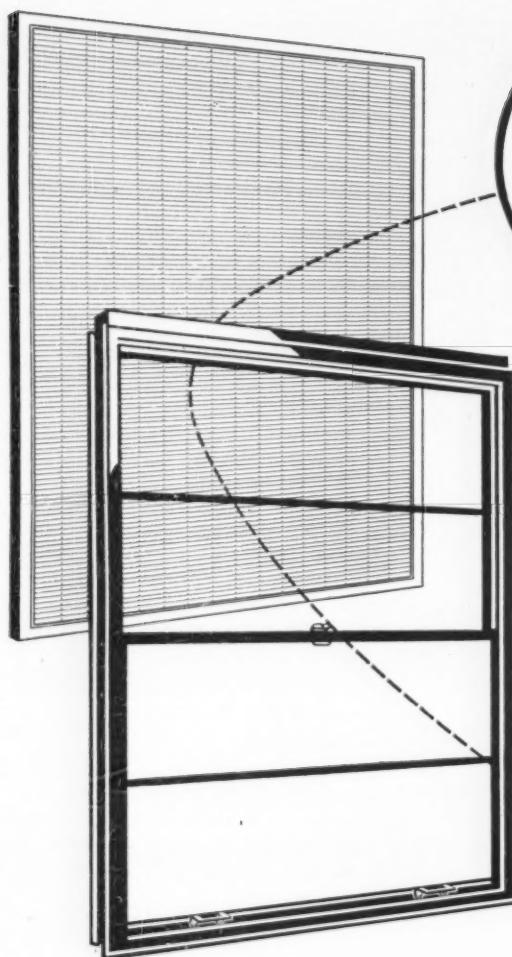
WIREBOUND BOX MANUFACTURERS ASSOCIATION

Room 1151, 327 South La Salle Street, Chicago, Illinois

- ☐ Have a sales engineer give me the whole story
☐ Send me a copy of "What to Expect from Wirebounds"

Name _____
Firm Name _____
Address _____
City, Zone and State _____





**Borg-Warner
KoolSHADE®
Sun Screen**

**TRUSCON
Double-Hung
Steel Windows**



Most efficient of all shading devices, Borg-Warner KoolShade Sun Screen is now available for use with equally famous Truscon Double-Hung Steel Windows.

Now—homes, schools, hospitals and other institutions, commercial and industrial buildings equipped with Truscon Double-Hung Steel Windows can have all the added benefits of KoolShade.

A bronze wire miniature outside venetian blind, KoolShade blocks up to 90% of the sun's heat rays. Lets in light and air, shuts out heat and glare. Alone keeps rooms as much as 15° cooler, and with air conditioning, greatly reduces the load on the system, thus cuts cost. Provides complete visibility, controls glare, keeps out insects.

Developed and produced by Borg-Warner's Ingersoll Products Division, KoolShade Sun Screen is a striking example of how—

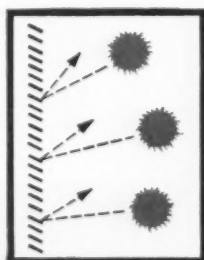
B-W engineering makes it work

B-W production makes it available

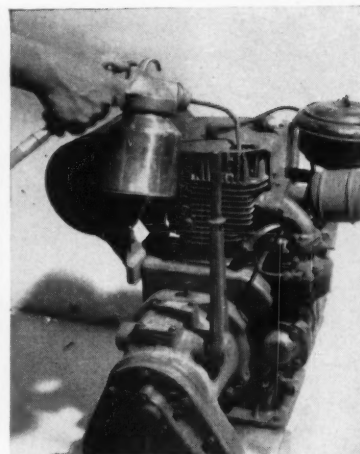
Cross section of KoolShade showing how it blocks sun's heat rays at various elevations.

Almost every American benefits every day from the 185 products made by

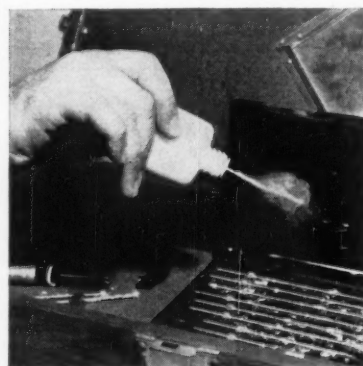
BORG-WARNER



THESE UNITS FORM BORG-WARNER, Executive Offices, Chicago: ATKINS SAW • BORG & BECK BORG-WARNER INTERNATIONAL • BORG-WARNER SERVICE PARTS • CALUMET STEEL • CLEVELAND COMMUTATOR • DETROIT GEAR • FRANKLIN STEEL • HYDRALINE PRODUCTS • INGERSOLL PRODUCTS INGERSOLL STEEL • LONG MANUFACTURING • LONG MANUFACTURING CO., LTD. • MARBON MARVEL-SCHLEBLER PRODUCTS • MECHANICS UNIVERSAL JOINT • MORSE CHAIN • MORSE CHAIN CO., LTD. • NORGE • PESCO PRODUCTS • REFLECTAL • ROCKFORD CLUTCH • SPRING DIVISION WARNER AUTOMOTIVE PARTS • WARNER GEAR • WARNER GEAR CO., LTD. • WOOSTER DIVISION



squeeze bottles of powdered crystals like the one pictured below still aren't on the market. Shell Oil Company, 50 West 50th Street, New York 20, N. Y., which makes the basic materials, sells the powder only in one-pound lots or more. It's a chance for an alert packager to



step in. Added incentive: Shell's newest VCI compound (number 250) is said to be faster-acting, longer lasting, that any previously available; flows readily, won't clog dispenser.

Cerro Bolivar is a name currently receiving a lot of attention in steel circles. The story of the discovery of this vast source of iron ore and the facilities needed for development is unusually well told in a new booklet, "The Orinoco Project," available from the Link-Belt Company, 307 N. Michigan Ave., Chicago 1, Ill. Schematic drawings, maps, and erection photographs show both ore and port facilities.

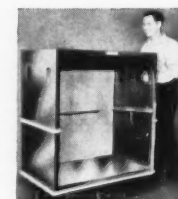
Equipment with the shakes is never an efficient performer (see cover story, March 1954). But measuring vibration is not always a simple matter. To make it possible to take accurate readings, even in the presence of a magnetic field, General Electric's Meter and Instru-

HAVE
PITY
ON YOUR
"PUSHERS!"

GIVE THEM LIGHT, MODERN
**MINIMAX
Pusharounds**
Made of the lightest weight
structural metal,
MAGNESIUM

They're important cost-savers, reducing dead-weight as much as 75%, sometimes converting a two-man-push into a one-man-job, when replacing the outmoded pushcarts made of heavy metal or wood. Describe what your pushers are now pushing by phone or letter to B&P. We'll send you pictures and designs, with estimated weight reduction and costs.

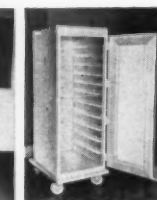
Janitor Truck Push-around for factory materials handling, including scrap and refuse.



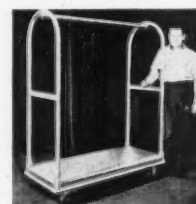
Popular Pusharound is the Merchandise Stock Truck. Has rubber, bumper-strips.



Pusharound Shelf Truck for in-store movement of merchandise.



Bakery-to-Store Delivery Cabinet.



The Push-around "Rambler" for garments. Can be used on the sales floor.

For anything that's lifted, carried, or pushed, weight saving may mean important cost-saving—or stepped-up sales appeal. Ask the advice of B&P engineers about redesigning in Magnesium.

BROOKS & PERKINS, Inc.

Pioneer Magnesium Fabricators
1946 W. FORT ST.

Tashmoo 5-5900 DETROIT 16

ADJUST-A-DOCK

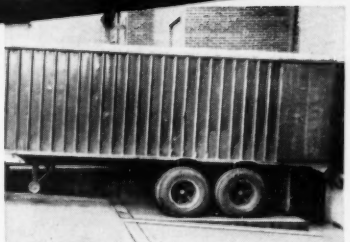


Make Dock Handling A Low-Cost Production Line Operation

You can reap the tremendous savings which accompany effortless, straight-line flow across your shipping docks. ADJUST-A-DOCKS are instantly raised or lowered to meet the level of any over-the-road truck or rail car. Note these unique construction and operating features.

- 1 Full-range raising and lowering, controlled by push button is instantaneous.
- 2 Extra-heavy rounded layover arms provide vertical compensation for truck spring deflection.
- 3 Ruggedly constructed to resist dead, live and impact loads. Surfaced with checkered plate.
- 4 Unique bridge design compensates for truck bed sloping either to right or left.
- 5 Each ADJUST-A-DOCK has its own power unit which is easily accessible, economical to maintain.
- 6 Models available with 10,000 and 20,000 capacities, become part of dock when not in use.

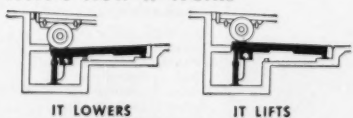
ADJUST-A-TRUCK



Now, When You Can't Adjust Your Docks Because of Lack of Space, You Can Adjust Your Trucks

Here is a unit that is set into the pavement in front of the dock and by means of a heavy-duty electric hydraulic system, it adjusts each vehicle to dock height; its capacity, 40,000 lbs.

Here's How It Works



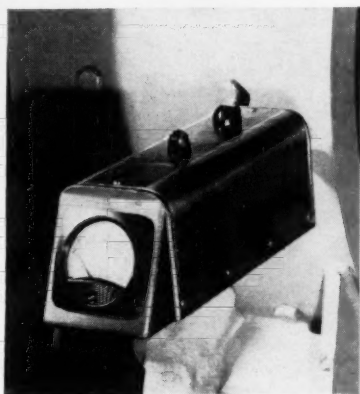
Write today for this free, informative booklet, illustrating and describing the revolutionary Rowe Adjust-A-Dock and Adjust-A-Truck.



ROWE METHODS, INC.

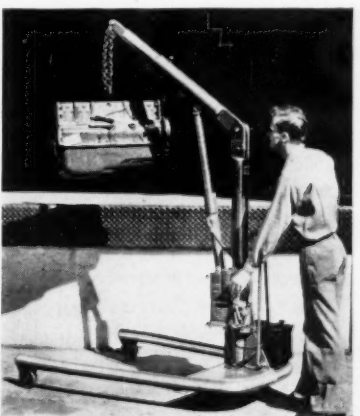
2534-S Detroit Ave.
Cleveland 13, Ohio

ment Department, Schenectady, N. Y., has developed the new direct-reading portable vibration meter pictured here. Using a barium titanate accelerometer in place of the usual coil-type pickup, and operat-



ing on regular hearing aid batteries, it is light in weight (only about 5 pounds), and easy to service. The pistol grip and trigger-type switch are designed to make it easy to operate as well.

Small, efficient, and labor-saving are the claims for this mobile hoist that can be changed into a stationary one by switching the mounting. Manufactured by the Unit Manufacturing Company, 1229 Harmon Place, Minneapolis 3, Minn., the Unit Electrically-Pow-



ered, Hydraulic Utility Hoist, rated at 5,000 p.s.i., is reported to be able to lift a 2,000 lb. load four feet by the mere pressing of a button. The mobile mounting is a four-wheel floor truck.

Workshop ideas aplenty are found in a new illustrated booklet prepared for distribution through employee reading racks—or just for the executive who likes to “build his

OPERATING CASH can make



the difference between Profits and Losses

In so many cases the difference between profits or losses is adequate operating cash. Lack of operating funds forces companies to take the expensive route in doing business:

Passing up trade discounts

Buying uneconomically

Losing sales because sufficient credit cannot be extended to the trade

Using high-cost, old machinery or equipment

Carrying incomplete inventories

Charging a premium for their product to compensate for higher internal costs

CASH and special plans geared to your operation come from Walter E. Heller & Company under their diversified financing services. Heller plans do not interfere with management or

profits. What you make is yours. Yet—you can use as little as \$25,000 or as much as \$3,000,000, for months or years. The cost is economical for you pay only for the money you use as your need varies.

Our clients are nation-wide, established manufacturers, wholesalers, distributors in many different industries.

Our volume of business—in excess of Six Hundred Million Dollars annually. Our experience—34 years of operation.

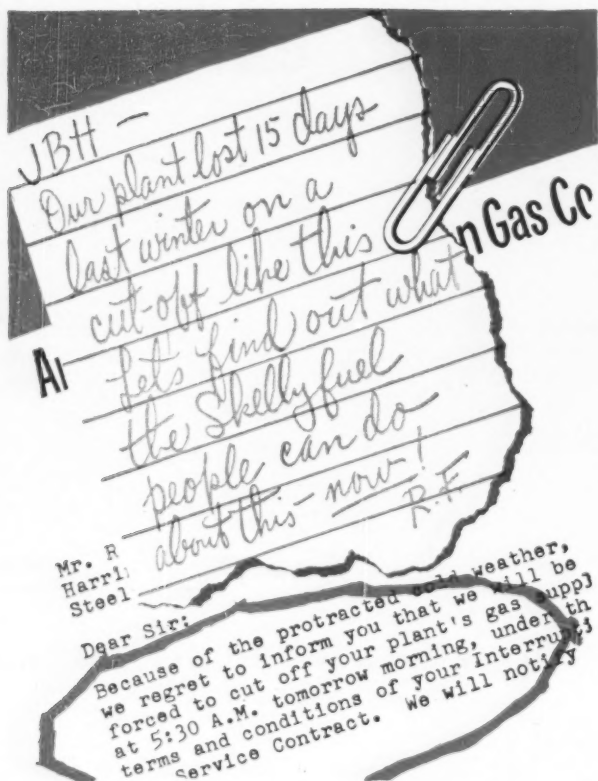
To learn the facts, write for a free copy of our brochure “Operating Dollars for Every Business.”

At the same time you are invited to write in strict confidence about financial problems in your own business to which our services might apply.



Walter E. Heller & Company

DEPT. DR,
105 WEST ADAMS STREET, CHICAGO 90
10 E. 40th ST., NEW YORK, NEW YORK



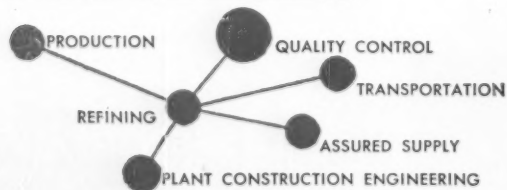
Don't let this happen to YOU!

Would a sudden cut-off of your plant's normal fuel supply deal a knockout blow to your production and your profits?

Get positive protection against costly fuel-gas interruptions and plant shutdowns! Do as scores of leading manufacturers are now doing: protect your plant with a modern propane or butane gas standby plant—designed, engineered, constructed and serviced by Skellyfuel.

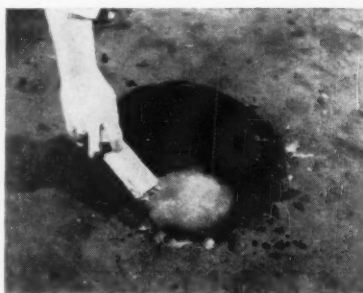
We'll be glad to demonstrate to you how the Skellyfuel "one-package" proposition can solve your emergency fuel problems. A call or a letter will arrange a meeting to suit your convenience.

Skellyfuel covers everything from blueprint to BTU!



Skellyfuel Industrial Division, Skelly Oil Company
605 W. 47th Street, Kansas City, Mo.

own." The second in a series (the first covered *Tools and Materials*), the new booklet, *Your Home Workshop*, is published by Mercer Publishing Company, 16 East 52 Street, New York 22, N. Y. Single copies are 12 cents; and prices range down to 4 cents each for large orders. In quantities of 10,000 or more, for instance, copies are 6 cents each. John David Beinert is the author.



A new compound for preparing concrete and cement flooring prior to sealing and refinishing, is claimed to make the job easier, faster, and safer. Rust-Oleum Corporation, 2799 Oakton Street, Evanston, Ill., which makes the material, "Surfa-Etch," says it is fume-free, non-inflammable, and harmless to metal surfaces with which it might come in contact.

A versatile ceiling panel that combines radiant heating, cooling, and noise control is now offered by Burgess-Manning Company, 5970 Northwest Highway, Chicago 31, Ill. Measuring only a little more than three inches from the outer surface to the top of its suspension channel, the panel unit combines an enameled aluminum snap-on facing, an acoustic-thermal blanket which can be selected to meet individual needs, and a water coil; yet it weighs only 2½ pounds a square foot, even when its water coil is filled. Plaster ceilings, Burgess-Manning points out, weigh nearly four times as much.

Mechanical mail preparation at the rate of 3,500 to 4,500 pieces per hour, is the claim of Inserting and Mailing Machine Company, Phillipsburg, New Jersey, for their newest mass mailer. Two additional features, a built-in postage meter and a power-driven stacker, make possible complete preparation of all types of mail with a greater capacity. The mass mailer will now gather multiple enclosures, insert them in envelopes, seal, stamp, count, and stack.

HOW TO HAVE TWO SALESMEN FOR EVERY PROSPECT

The EXECUTIVE Line

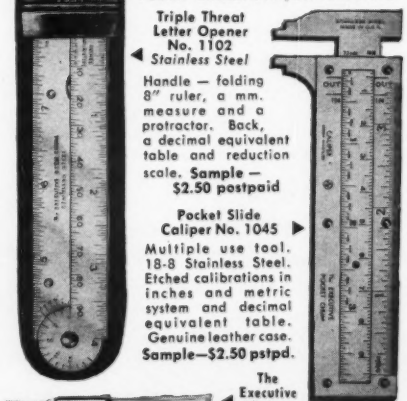


... Makes Contacts When Your Salesman Isn't There
... Helps Him SELL When He Is!

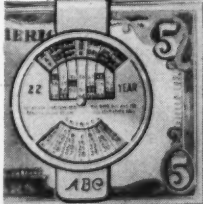
"Many of the declines in business could have been prevented by efficient salesmanship," reports Dun's. ONE proven way to make selling more efficient — to remind both customers and prospects of you and your products every hour of the day — is through an Executive Line Advertising Specialty or Business Gift.

Every Executive Line item STAYS on a desk, or in a pocket, because its recipient is sure to find it extra valuable, extra useful, extra long-lasting. An Executive Line Specialty, with your name, slogan or trademark on it, serves as both a good will ambassador and a tireless "second salesman."

UNUSUAL
BILL CLIPS • LETTER OPENERS
TAPE MEASURES • LIGHTERS
NOVEL PAPERWEIGHTS • CALENDARS
PEN SETS • POCKET KNIVES
ASH TRAYS AND MANY OTHER ITEMS
The EXECUTIVE LINE products are available from most good Advertising Specialty firms or mail coupon TODAY attached to your letterhead.



Handle — folding 8" ruler, a mm. measure and a protractor. Back, a decimal equivalent table and reduction scale. Sample — \$2.50 postpaid.
Pocket Slide Caliper No. 1045
Multiple use tool. 18-8 Stainless Steel. Etched calibrations in inches and metric system and decimal equivalent table. Genuine leather case. Sample — \$2.50 postpaid.
The Executive 22 Year Calendar Bill Clip No. 510
It's NOT just a Pocket Calendar, but an easy-to-operate calendar that is good for 22 years, combined with a beautiful Bill Clip. Calendar's black enamel lettering deeply etched into the metal, contrasts with the polished stainless steel. Sample — \$1.50 postpaid.



The EXECUTIVE LINE, 136 W. 54 St., New York 19, N.Y.
Send free catalog and prices. I am enclosing \$..... for following blank samples (checked).
No. 300 ☐ No. 1102 ☐ No. 1045 ☐ No. 510 ☐
Name.....
Firm's Name.....
Address.....
City..... Zone..... State.....
MI-8-54

THIS COUPON MUST BE ATTACHED TO LETTERHEAD



Get Roof-High Storage at Floor-Level Costs

with

ELPAR

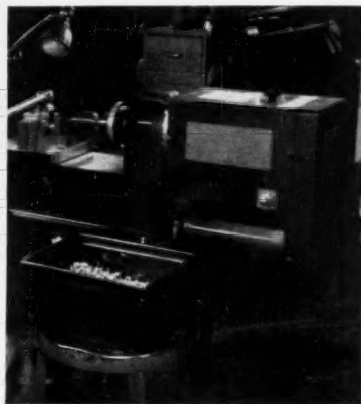
"Air-Rights" fork trucks

Why scatter your loads over costly floor space leaving a vacuum overhead? E-P fork trucks will high tier them so you can profitably use all overhead space. There are 8 models in the E-P "Air-Rights" series, in increments of 1,000 lbs. between 2,000 and 10,000 lbs. Electrically powered, they give dependable operation for pennies per day. All parts are quickly accessible for fast, preventive maintenance. Their design features compactness and easy steering.

If you want fork trucks built to match the quality of the finest machinery in your plant, investigate the E-P "Air-Rights" series. Write The Elwell-Parker Electric Co., 4315 St. Clair Ave., Cleveland 3, Ohio.



Self-contained and adaptable to either vertical or horizontal mounting, the new automatic drill unit pictured here has many features to simplify installation, operation, and maintenance. Switches, valves, and



relays are built in, so only two connections (air and electricity) are needed for installation. It weighs less than 90 pounds, has ten spindle speeds with either a $\frac{1}{2}$ or $\frac{3}{8}$ hp motor. Chuck capacity ranges from No. 60 drill to $\frac{3}{8}$ inch. Auxiliary equipment includes an hydraulic feed control for drilling hard materials and an electronic repeat cycle timer for deep hole drilling. Du-more Company, Racine, Wis., makes it.

A new adding machine of the ten-key variety features a visual indicator, showing figures before they are entered or added. The makers, Friden Calculating Machine Company, Inc., 2350 Washington Avenue, San Leandro, Cal., have made two other changes which they believe will speed up operation. The cipher key has been moved from the bottom to the left side and the center row of numeral keys (4, 5, and 6) are concave to facilitate touch operation.

Strong, tough plastic helps safeguard lighting in hazardous areas. A new portable, explosion-proof floodlight, made by Safe Lighting, Inc., 91-03 Astoria Blvd., Jackson Heights, N. Y., has a special air and water-tight casing of Formica plastic which allows use of the light in areas where volatile gases are present. As SL and The Formica Company proudly point out, "It is the only portable floodlight ever to receive the approval of the Underwriters' Laboratories, Inc. for use in all hazardous areas . . .

AUTOMATIC ELECTRIC COMPANY—A GREAT NAME IN COMMUNICATIONS



get more done with P-A-X

If it's cutting down overhead you're after, a P-A-X Business Telephone System will do it! Its completely automatic *inside* telephone service cuts right through costly delays and confusion.

Let's say you've installed P-A-X telephones for the use of your executives and key employees. Virtually every fact and instruction which keeps your operations rolling can then be exchanged in seconds . . . at the turn of a dial . . . without a man leaving his desk. The walking, waiting, fatigue and errors your people can thus by-pass each day will add up to significant savings. You'll feel the benefits of P-A-X communication throughout your operations!

Thousands of delighted users in every type and size of business are now enjoying the benefits of P-A-X. To get complete facts, call or write—Distributor in U. S. and Possessions: Automatic Electric Sales Corporation (HAYmarket 1-4300), 1033 West Van Buren Street, Chicago 7, Illinois. Offices in principal cities.

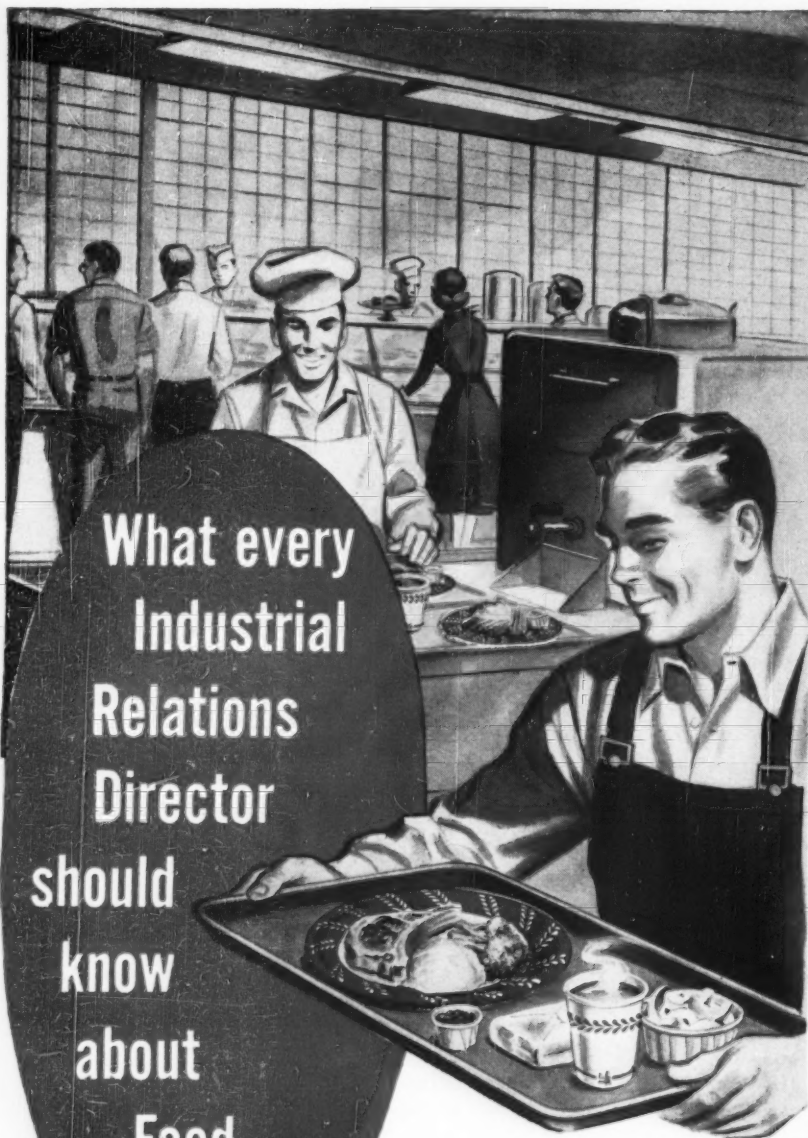


P-A-X

business
telephone
systems

AUTOMATIC  ELECTRIC

Write for this useful information today! P-A-X users have helped us prepare illustrated case studies describing P-A-X in daily use for: a financial institution; a processing plant; a school; a railroad; an oil company. Specify the case studies which interest you.

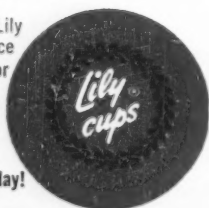


What every
Industrial
Relations
Director
should
know
about
Food
Service!

Quick, easy, economical employee feeding is a major problem in every plant with 100 or more workers on the payroll. Thousands of Industrial Relations and Personnel men in varied industries throughout the nation have solved it with Lily* Paper Service!

Here's why: Lily has a complete service to fit any size and type of operation . . . mobile cart, cafeteria, or both. There are sturdy, smart looking cups, containers and plates in a wide range of sizes to meet every need — hot and cold drinks, soups and many varieties of food. Service is swift, simple and sanitary. Best of all, there's nothing to wash, dry and stack away. Labor costs are cut to the bone. In addition, kitchen help can prepare many foods in slack periods — a tremendous time-saving aid. And with Lily, you eliminate costly, dangerous breakage so harmful to both budget and morale.

Case histories, details and samples of Lily Paper Service are yours for the asking — with no obligation whatsoever. Write us today!



LILY-TULIP CUP CORPORATION

122 East 42nd Street, New York 17, N. Y.

Chicago • Kansas City • Los Angeles • San Francisco • Seattle • Toronto, Canada

*T.M. REG. U.S. PAT. OFF.

and the only one permitted for use in hydrogen, acetylene, and manufactured gas areas."

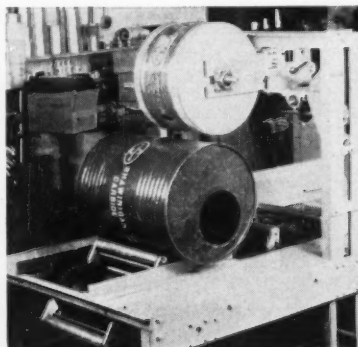
A space-saving conveyor system for warehouse and storage areas has been developed by the Alvey Conveyor Manufacturing Company, 9301 Olive Street, St. Louis,



Mo. By using a series of inclining and declining conveyors, to build up units like the one pictured here, material is moved, raised, and lowered to desired levels without interfering with normal storage and operations.

A new sealing agent for envelope flaps has been introduced by National Adhesives, 270 Madison Avenue, New York 16, N. Y. A re-moistening resin emulsion which is deposited in a thin, clear film, it is said to provide stronger seals for all type of paper. National says it resists curling and sticking under humid conditions, too; and predicts its use on labels, sealing tapes, decalcomanias, and many other products of this type.

Drum printing at the rate of fifteen per minute is the claim of the Industrial Marking Equipment Company, 454 Baltic Street, Brooklyn 17, N. Y., for its new machine that handles 100 and 250 pound drums. Drums are manually loaded on a cradle which positions them under the print wheel. The latter revolves, prints the drum, and the drum is then automatically ejected.

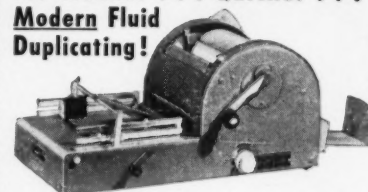


WE WILL RE-STYLE YOUR OUT-OF-DATE DOUBLE BREASTED SUIT INTO A SMART NEW SINGLE BREASTED MODEL

Write Dept 1 for details and free brochure

Sid Colburn
313 NO. BEVERLY DRIVE
BEVERLY HILLS, CALIF.

BUY REX-O-graph for Cleaner . . . Quicker . . . Modern Fluid Duplicating!



- Accurate copies of all kinds of work!
- Announcements, letters, office forms!
- Colors from one Master, one run!
- Postcards to 9"x14" size . . . tissue to card stock!
- Automatic paper centering!
- Precision-built, trouble-free!

MODELS FROM \$95 to \$295
(Plus Tax . . . F. O. B. MILWAUKEE)

DEALERS: Choice areas open for steady profits on equipment and supplies!

REX-O-graph, inc.
7846 W. Hicks • Milwaukee 14, Wis.

OWN A GOING BUSINESS OF YOUR OWN CHOICE

New FREE Service

Free book describes over 2,000 select businesses, farms and income properties for sale or trade directly by the owners throughout the U.S. and Alaska. **MONEY MAKING OPPORTUNITIES**—from \$3,000 to \$1,000,000—retail, whole, industrial plants, factories, ranches, citrus groves, large and small. Contains interesting business articles, valuable advice, vital information, prices, terms, earnings, lease, rent; names and addresses so you can deal direct with owners. No salesmen will call. No commissions to pay us. All you do is write—but be sure to say what kind of business or income property you might wish to buy and where you want to locate.

Write for free BOOK NO. 165
National Business & Property Exchange
5400 Wilshire Blvd., Los Angeles 36, Calif.



DUN'S REVIEW AND MODERN INDUSTRY will appreciate early notices of change of address. Usually, it is necessary to have four weeks' notice. Please include the old address.

Louis J. Glickman
REALTY INVESTMENTS
565 FIFTH AVENUE • NEW YORK 17, N. Y.

Now more than ever

PLANT ENGINEERS PREFER

Schmieg
CENTRI-MERGE

INDUSTRIAL EQUIPMENT for
✓ Long, Trouble-free Performance
✓ Low Maintenance Costs
✓ Ease of Installation
✓ Space-saving Economy

GET THE FACTS
about SCHMIEG Equip-
ment Before you Decide:

**DUST and FUME
ELIMINATORS**

**INDUSTRIAL
OVENS**

**SPRAY
BOOTHS**

**MECHANICAL
WASHERS**

All SCHMIEG equipment is designed, engineered, manufactured, and installed with the fundamental objective of protecting and improving the quality of the product you manufacture.

CONSULT SCHMIEG ENGINEERS and find out how a Schmieg installation will keep your plant operating at highest efficiency levels at lowest possible cost.

Schmieg
INDUSTRIES INC.
Engineers & Manufacturers
P. O. BOX 4701 • DETROIT 34, MICHIGAN

ADVERTISING INDEX

ALAN WOOD STEEL CO.....	5
John Falkner Arndt & Co., Inc.	
ALLEGHENY LUDLUM STEEL CORP....	14
Walker & Downing, General Agency	
ALLIED AUTOMATIONS DIVISION, ALLIED STEEL & CONVEYORS, INC.....	64
Schneider Studios	
ALLIED PRODUCTS CORP.....	66
Charles M. Gray & Asso., Inc.	
ALLIED RESEARCH PRODUCTS, INC....	4
Emery Advertising Corporation	
ALLIS-CHALMERS MFG. CO.....	49
Compton Adv., Inc.	
AMERICAN APPRAISAL CO., THE.....	60
The Buchen Co.	
AMERICAN CREDIT INDEMNITY CO....	87
Van Sant, Dugdale & Co., Inc.	
AMERICAN PULLMAX CO., INC.....	62
Grimm & Craigle	
AMERICAN TELEPHONE & TELEGRAPH CO.....	90
N. W. Aver & Son Inc.	
AUDIO PRODUCTS CORP.....	65
The McCarty Co.	
AUTOMATIC ELECTRIC CO.....	85
Proebsting, Taylor, Inc.	
BAKELITE CO., A DIV. OF UNION CARBIDE & CARBON CORP. 35, Cover III	
J. M. Mathes, Inc., Adv.	
BARBER-GREENE CO.....	56
The Buchen Co.	
BETHLEHEM STEEL COMPANY.....	6
Jones & Brakeley, Inc.	
BORG-WARNER CORP.....	82
Rogers & Smith Adv. Agency	
BREUER ELECTRIC MFG. CO.....	44
Grimm & Craigle	
BROOKS & PERKINS, INC.....	82
Holden, Chapin, LaRue, Inc.	
BUNDY TUBING COMPANY.....	3
Brooke, Smith, French & Dorrance, Inc.	
BURROUGHS CORP.....	41
Campbell-Ewald Co.	
CHALLENGE MACHINERY CO.; THE....	42
Simmonds & Simmonds, Inc.	
CHASE NATIONAL BANK, THE.....	12
Albert Frank-Guenther Law, Inc.	
CHEVROLET MOTORS DIV. GENERAL MOTORS CORP.....	8
Campbell-Ewald Co.	
CITIES SERVICE CO.....	55
Albert Frank-Guenther Law, Inc.	
CLEMENT, J. W. CO., INC.....	21
Baldwin, Bowers & Strachan, Inc.	
COLBURN, SID.....	86
Envart & Rose Advertising	
COLUMBIA RIBBON & CARBON MFG. CO., THE.....	58
E. M. Freystadt & Assoc. Inc.	
COMMERCIAL CREDIT CO.....	48
Van Sant, Dugdale & Co., Inc.	
CONSUMERS POWER CO.....	73
Commonwealth Services, Inc.	
CUTLER-HAMMER, INC.....	19
Kirkgasser-Drew, Adv.	
DELUXE METAL FURNITURE CO.....	61
Kuttner & Kuttner, Inc.	
ENISON ENGINEERING CO., THE.....	32
Griswold-Eshleman Company	
DETREX CORPORATION.....	65
Charles M. Gray & Associates, Inc.	
DIAMOND POWER SPECIALITY CORPORATION.....	80
Witte & Burden Advertising	
DICTOGRAPH PRODUCTS, INC.....	56
Al Paul Lefton Co., Inc.	
DRAKE, STARTZMAN, SHEAHAN AND BARCLAY.....	60
Marsteller, Gebhardt & Reed, Inc.	
DUREZ PLASTICS & CHEMICALS, INC. ...	54
Comstock & Co.	
EASTMAN KODAK COMPANY (AUDIO VISUAL).....	80
Charles L. Rumrill & Co., Inc.	
ELWELL-PARKER ELECTRIC CO.....	85
The Bayless-Kert Co.	
EMERSON ELECTRIC MFG. CO., THE.....	20, Cover II
Winius-Brandon Company	
EXECUTIVE LINE, THE.....	84
Kaplan & Bruck Advertising	
EXECUTONE, INC.....	13
The Joseph Katz Co.	
FATE-ROOT-HEATH CO., THE.....	15
Howard Swink Advertising Agency, Inc.	
FOSTORIA PRESSED STEEL CORP., THE.	60
McDaniel, Fisher & Spelman Co.	
FOUR WHEELS, INC.....	45
H. M. Gross Company	
GENERAL BOX CO.....	64
The Buchen Company	
GENERAL ELECTRIC (SYRACUSE).....	59
Maxon, Inc.	
GLICKMAN, LOUIS J.....	86
Marwell Advertising	
GRAND RAPIDS BRASS CO.....	45
Wesley Aves & Associates	
HANSEN, A. L. MFG. CO.....	36
J. M. Haggard Advertising	
HEINN CO., THE.....	75
Paulson-Gerlach & Assoc., Inc.	
HELLER, WALTER E. & COMPANY.....	83
R. M. Loeff Advertising Inc.	
HERTZ TRUCK RENTAL SYSTEM.....	53
Campbell-Ewald Co.	
HYATT BEARINGS DIV. GENERAL MOTORS CORP.....	37
D. P. Brothert & Co.	

American Credit Insurance lines up credit lines

1. Backs judgement of credit executive.
2. Gives positive loss prevention.
3. Harmonizes Credit-Sales relations.
4. Provides endorsement for borrowing purposes.
5. Protects working capital invested in receivables.
6. Promotes efficiency in organization.
7. Creates confidence—basis of all credit.
8. Provides Service for handling collections.
9. Minimizes risk and anxiety, promotes planning.
10. Endorses customer's promise to pay.
11. Gives Accounts Receivable real value.
12. Provides accurate cost basis of shipments.
13. Helps avoid secondary credit costs.
14. Creates an adequate bad debt reserve.

For booklet, write Dept. 50, First National Bank Bldg., Baltimore 2, Md.

American Credit Indemnity Company of New York

COMING NEXT MONTH

DUN'S REVIEW and Modern Industry

An Answer to:

WHAT'S WRONG WITH OFFICE MANAGEMENT?

The September issue will focus on a subject of major concern to nearly every executive in business and industry. With costs continuing to rise and sales in most lines not yet breaking through the clouds, executives are paying more attention than usual to office management. In next month's issue, you will find your thinking along these lines stimulated by answers to such questions as—

•In what ways is the office failing to serve top management, and who is to blame?

•What trends are developing that may make the office manager as important as the sales manager?

•What are the facts of office operations that a non-office executive should know?

•Why are the vast majority of offices under-mechanized?

•How can you discover the most conspicuous areas of waste in office operations?

•What areas of office management will electronic developments affect?

•What educational efforts are being made to increase over-all office efficiency?

•What are the major stumbling blocks to the purchase of office equipment?

•How can you check key points in your office operations?

•What are the current trends in the design and control of office forms?

•How does top management appraise the rôle of office management?

•Where are the greatest opportunities for cost-cutting in most offices?

•What criteria can be set up to judge efficient office management?

HYDRAULIC PRESS MFG. CO., THE	68	RANSBURG ELECTRO-COATING	18
The Jay H. Maish Company		CORP.	
I-T-E CIRCUIT BREAKER CO.	46	H. L. Ross Adv. & Publicity	
The Richard A. Foley Agency, Inc.		RECORDAK (SUBSIDIARY OF	39
IDEAL STENCIL MACHINE CO.	42	EASTMAN KODAK COMPANY)	
Batz-Hodgeson-Neuwoehner, Adv.		J. Walter Thompson Co.	
IRONS & RUSSELL COMPANY	58	REVOLVATOR COMPANY	58
Knight & Gilbert, Inc.		La Porte & Austin, Inc.	
J. J. K. COPY ART PHOTOGRAPHERS	52	REX-O-GRAF, INC.	86
Arthur Pine Assoc.		Barnes Advertising Agency	
JANETTE ELECTRIC MFG. CO.	70	RICHARDS-WILCOX MFG. COMPANY	52
Lloyd M. Rosenow, Inc.		George H. Hartman Company	
LILY-TULIP CUP CORPORATION	86	ROBBINS, ALFRED, ORGANIZATION,	84
Al Paul Lefton Co., Inc.		INC.	
LOOMIS MACHINE CO.	59	Kaplan & Bruck Advertising	
Paxson Advertising, Inc.		RONSON CORPORATION	33
LYCOMING DIVISIONS—		William H. Weintraub & Company, Inc.	
AVCO MFG. CO.	57	ROWE METHODS, INC.	83
Benton & Bowles, Inc.		Dix & Eaton	
MAGLINE, INC.	16	RYERSON, JOSEPH T. & SON, INC.	71
Rossi & Co.		Calkins & Holden, Carlock,	
MAGNESIUM CO. OF AMERICA	52	McClinton & Smith, Inc.	
Marsteller, Gebhardt & Reed, Inc.		SAWYER'S INC.	36
MAHON, R. C. COMPANY, THE	79	Carvel Nelson and Powell Advertising Agency	
Anderson, Inc.		SCHMIEG INDUSTRIES CO., INC.	87
MANIFOLD SUPPLIES COMPANY	54	Alfred B. Caldwell, Inc.	
Richard & Gunther, Inc.		SHREDMASTER CORP., THE	60
MARKEM MACHINE COMPANY	38	Cayton, Inc. Advertising	
Meissner & Culver, Inc.		SKELLY OIL COMPANY	
MARSH STENCIL MACHINE CO.	54	(INDUSTRIAL DIVISION)	84
Krupnick & Associates, Inc.		Henri, Hurst, & McDonald, Inc.	
MILWAUKEE DUSTLESS BRUSH CO.	42	SOCIETY OF INDUSTRIAL PACKAGING	
Al Herr Advertising Agency, Inc.		AND MATERIALS HANDLING	
MONROE CALCULATING MACHINE		ENGINEERS	74
COMPANY, INC.	63	Armstrong Advertising Agency	
L. H. Hartman Company, Inc.		STAYMOIST	52
MOSLER SAFE COMPANY, THE	18	William F. Holland Agency	
Stockton-West-Burkhart, Inc.		TEXTILE BANKING COMPANY	50
MURRAY, D. J. MANUFACTURING CO.	74	L. E. McGivena & Co., Inc.	
R. C. Breth, Inc.		TIMKEN ROLLER BEARING	
NATIONAL BUSINESS & PROPERTY		COMPANY, THE	Cover IV
EXCHANGE	86	Batten, Barton, Durstine & Osborn, Inc.	
Byron H. Brown & Staff		TOLEDO SCALE COMPANY	36
NATIONAL CITY BANK OF		Beeson-Reichert, Inc.	
NEW YORK, THE	89	UNION PACIFIC RAILROAD	72
Albert Frank-Guenther Law, Inc.		The Caples Company	
NEW YORK TERMINAL WAREHOUSE		UNITED STATES STEEL CORPORATION	34
COMPANY	16	Batten, Barton, Durstine & Osborn, Inc.	
Bruce Angus Advertising Agency		VICKERS INCORPORATED	69
OTIS ELEVATOR COMPANY	43	Witte & Burden	
G. M. Basford Co.		WAGNER ELECTRIC CORP.	56
OXFORD FILING SUPPLY CO., INC.	59	Arthur R. Mogge, Inc.	
Joseph Reiss Assoc.		WEST BEND EQUIPMENT CORP.	20
PALMER-SHILE CO.	44	Morrison-Greene-Seymour, Inc.	
Alfred B. Caldwell, Inc.		WEST DISINFECTING COMPANY	17
PLYMOUTH LOCOMOTIVE WORKS	15	G. M. Basford Co.	
Howard Swink Advertising Agency		WEST VIRGINIA INDUSTRIAL &	
PITNEY-BOWES, INC.	40	PUBLICITY COMMISSION	38
L. E. McGivena & Co., Inc.		Advertising, Inc.	
PLUME & ATWOOD MFG. CO.	61	WIREBOUND BOX MFG. ASSOC.	81
Langelier Advertising Agency, Inc.		Waldie & Briggs, Inc.	
		ZIPPO MANUFACTURING CO.	51
		N. W. Ayer & Son, Inc.	

DUN'S REVIEW and Modern Industry

NORMAN C. FIRTH, Editor and Publishing Director
VIOLA V. ANDERSON, Administrative Assistant

EDITORIAL STAFF

RICHARD L. KRAYBILL, Managing Editor

CLARENCE SWITZER, Art Director	H. E. BLANK, JR., Consulting Editor
ANNETTA R. GARDNER, Industrial Editor	H. LORRAINE CARSON, Business Conditions Editor
MARGARET L. JONES, Executive Methods Editor	ALFRED G. LARKE, Employer Relations Editor
	JOSEPH A. D'ANDREA, Statistician

Associate Editors: JOHN DREXLER, THOMAS KENNY, CHARLES T. DANIEL

Contributing Editors: EDWIN B. GEORGE, A. M. SULLIVAN

Production Assistants: ADRIENNE O'RYAN, ROY PAKANSKY

WALTER F. GRUENINGER, Circulation Director

ADVERTISING STAFF

ALVAH B. WHEELER, Advertising Director

ALEX J. DUGHI, Sales Manager

New York (99 Church St.): GEORGE MATURNIAK, PHILIP W. MURPHY, MARK McDONALD,

FREDERIC A. EWALD, WILLIAM MAGINN

Chicago (300 W. Adams St.): JOHN KROM, RALPH O. MCGRAW

Cleveland (Terminal Tower): CARL YODER

Detroit (Cadillac Tower): CARL NEPPACH, JR.

Southwest (505 N. Erway St., Dallas): ED. F. WRIGHT, Publisher's Representative

Pacific Coast (57 Post St., San Francisco, and 2330 W. Third St., Los Angeles):

ROBERT W. WALKER CO.

Published monthly by Dun & Bradstreet Publications Corporation. J. Wilson Newman, President; Norman C. Firth, Alvah B. Wheeler, Alex J. Dughi, Vice-Presidents; Arthur Garrett, Treasurer; Owen A. Sheffield, Secretary; Viola V. Anderson, Assistant Secretary. Directors: Fred H. Brockett, Alex J. Dughi, Norman C. Firth, Roy A. Foulke, Arthur Garrett, J. Wilson Newman, Alvah B. Wheeler, and Arthur D. Whiteside.

THE NATIONAL CITY BANK OF NEW YORK

Head Office • 55 WALL STREET • New York

71 Branches in Greater New York

57 Branches Overseas



Statement of Condition as of June 30, 1954

ASSETS

Cash, Gold and Due from Banks.....	\$1,385,694,206
United States Government Obligations.....	1,602,710,324
Obligations of Other Federal Agencies.....	40,332,173
State and Municipal Securities.....	575,223,849
Other Securities.....	78,411,528
Loans and Discounts.....	2,202,228,486
Real Estate Loans and Securities.....	230,682
Customers' Liability for Acceptances.....	27,838,032
Stock in Federal Reserve Bank.....	10,500,000
Ownership of International Banking Corporation.....	7,000,000
Bank Premises.....	30,768,737
Other Assets.....	5,706,940
Total.....	\$5,966,644,957

LIABILITIES

Deposits.....	\$5,455,443,656
Liability on Acceptances and Bills..\$66,511,778	
Less: Own Acceptances in Portfolio.....	36,578,047
Due to Foreign Central Banks.....	11,349,000
(In Foreign Currencies)	
Items in Transit with Branches.....	346,350
Reserves for:	
Unearned Discount and Other Unearned Income.....	22,573,793
Interest, Taxes, Other Accrued Expenses, etc.	35,550,824
Dividend.....	3,750,000
Capital.....\$150,000,000	
(7,500,000 Shares—\$20 Par)	
Surplus.....	200,000,000
Undivided Profits.....	57,697,603
Total.....	\$5,966,644,957

Figures of Overseas Branches are as of June 25.

\$487,484,642 of United States Government Obligations and \$12,852,700 of other assets are pledged to secure Public and Trust Deposits and for other purposes required or permitted by law.

(Member Federal Deposit Insurance Corporation)

Affiliate of The National City Bank of New York for separate administration of trust functions

CITY BANK FARMERS TRUST COMPANY

Head Office: 22 William Street, New York

Capital Funds \$32,439,461

DIRECTORS

HOWARD C. SHEPERD
Chairman of the Board

JAMES S. ROCKEFELLER
President

RICHARD S. PERKINS
Vice-Chairman of the Board

STANLEY C. ALLYN
President, The National Cash Register Company

SOSTHENES BEHN
Chairman, International Telephone and Telegraph Corporation

CURTIS E. CALDER
Chairman of the Executive Committee, Electric Bond and Share Company

CLEVELAND E. DODGE
Vice-President, Phelps Dodge Corporation

RALPH GWIN FOLLIS
Chairman of the Board, Standard Oil Company of California

ROY H. GLOVER
Vice-President and General Counsel, Anaconda Copper Mining Company

JOSEPH P. GRACE, JR.
President, W. R. Grace & Co.

HARRY C. HAGERTY
Financial Vice-President, Metropolitan Life Insurance Company

AMORY HOUGHTON
Chairman of the Board, Corning Glass Works

NATHAN C. LENFESTEY
Executive Vice-President and Cashier

KEITH S. McHUGH
President, New York Telephone Company

ROGER MILLIKEN
President, Deering, Milliken & Co., Incorporated

FREDERICK B. RENTSCHLER
Chairman, United Aircraft Corporation

REGINALD B. TAYLOR
Williamsville, New York

ROBERT WINTHROP
Robert Winthrop & Co.

BOYKIN C. WRIGHT
Shearman & Sterling & Wright



INQUIRY

**Long Distance
doesn't cost...
it pays**

Following up inquiries by Long Distance saves time, gets you there ahead of competition. Telephone contacts have many of the qualities of personal contacts, plus speed. Often you make immediate sales.



ACTION

Whether selling or buying or getting the facts, you'll find that the planned use of Long Distance pays for itself—many times over.

We have some specific suggestions for the profitable use of Long Distance in Sales, Purchasing, Administration, Traffic, Production, Engineering and Accounting. A call to your Bell Telephone Business Office will bring a representative to discuss them with you.



SALE!

LONG DISTANCE RATES ARE LOW

Here are some examples:


New York to Philadelphia....	50¢
Cleveland to Indianapolis....	90¢
Chicago to Pittsburgh.....	\$1.15
Boston to Detroit.....	\$1.40
Washington to San Francisco.	\$2.50

These are the daytime Station-to-Station rates for the first three minutes. They do not include the federal excise tax. Long Distance rates are even lower after 6 o'clock every night and all day Sunday.

Call by Number. It's faster.



BELL TELEPHONE SYSTEM



THEY HAVEN'T SCRATCHED THE SURFACE!

Not these chair leg tips... molded of BAKELITE Polyethylene. They're kind of soft-surfaced... not quite bouncy, just comfortably flexible and quiet. Still, they're good and tough, and will wear a long time. Come in different colors, too.

The potential uses for BAKELITE Polyethylene are many and varied—the surface has not yet been scratched. You can put it to work as film... or in coatings, castings, moldings, extrusions, laminations. Any way it's used, chances are it will make products sell better, work better, or just plain easier to make. Better investigate.

BAKELITE

TRADE MARK

Polyethylene

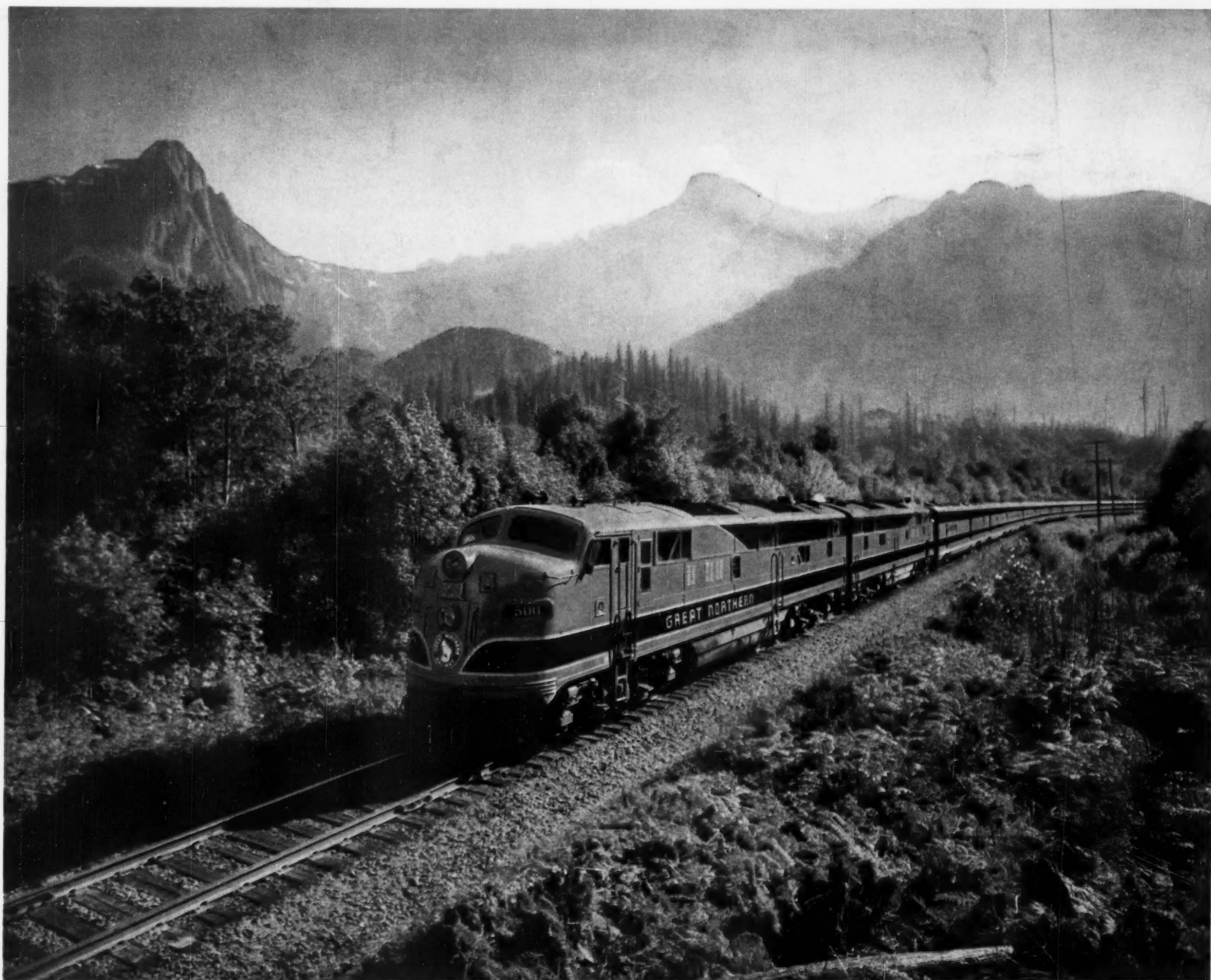
BAKELITE COMPANY

A Division of Union Carbide and Carbon Corporation **UCC**
30 East 42nd Street, New York 17, N. Y.

In Canada:

Bakelite Company, Division of Union Carbide Canada Limited
Belleville, Ontario

Keeping America on the GO...with **TIMKEN** Tapered Roller Bearings



What this Empire Builder did for people, the railroads are now doing for freight

PASSENGERS on the Great Northern's Timken bearing-equipped Empire Builder find an extra half day waiting for them in Chicago or Seattle. This new streamliner beats the old schedule by 13½ hours.

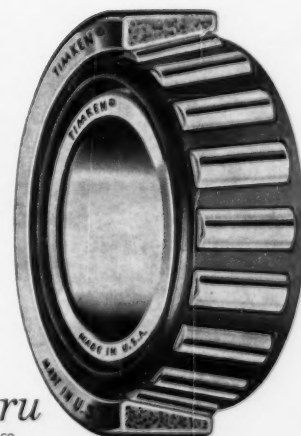
Now freights too are being speeded up by Timken tapered roller bearings. With "Roller Freight", one railroad cuts a desert-mountain livestock run from 60 hours to 27!

"Roller Freight" ends the railroads' No. 1 problem and chief cause of freight train delays: overheated friction bearings, or hot boxes. Since Timken bearings roll the load, they don't heat up like old-style friction bearings. When all freight cars have roller bearings, the railroads will save over \$55 million a year just by eliminating the hot box problem.

Why do Timken bearings roll with so little friction and have such fine

quality? Because, by geometric law, they have true rolling motion. Because they're made better every step of the way. Most of all because of their steel. The steel is the heart of any bearing, and only the Timken Company makes its own to insure quality in every bearing.

That's why industry uses Timken bearings to keep America on the go. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".



Only **TIMKEN** bearings roll so true, have such quality thru-&-thru

COPYRIGHT 1954 THE T.R.B. CO.